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CONTENTS.

EDITORIALS:
Wild Cat 53
Mineral Wool 53
Copper and Zinc in the West 53
The Telluride Mines of Colorado 54
The Lead Interests of the Mississippi Valley 55
Dividends vs. Reputation 55
Bowers' Air Compressor 56
Some Errors in "Minute Measurements" 56
The Little Annie Mine, Summit, Colo 57
On the Influence of Steam-Jackets 58
CORRESPONDENCE:
The Meter as a Standard 59
The Placer Mining Co. of Colorado 59
On Coupling Silver Leads 59
Clearfield Coal Region 59
North Shore of Lake Superior 60
An Unsuspected Source of Error in Magnetic Needle Readings of Surveying Instruments 60
Krom's Dry Ore Concentration, Austin, Nev 60
The Quotations of Gas Stocks for 1877 .. 61
The Poughkeepsie Bridge 61
Mining News 62
NOTES:
The Amber Mines of Prussia 58
Our Iron and Steel Display at Paris 58
A New Coal Field in Nevada 58
Liability of Mine Owners for Injuries to Employes 61
Forging and Tempering Iron and Steel. 61
Iowa Coal Discovery 63
Pneumatic Clocks 63
The Salt Producing Territory 63
Indian Rubber Piston Packing 63
Index to Current Technical Literature ... 64
Assay Department 64
COAL TRADE REVIEW 64
IRON MARKET REVIEW 66
METALS 66
Salt Lake City Ore Market 66
FINANCIAL:
New York Stocks 67
Philadelphia Stocks 67
Copper Stocks 67
Gold and Silver Stocks 67
Gas Stocks 69
Advertisers' Index 69

AT the rooms of the American Society of Civil Engineers, 104 East Twentieth street, New York, on Tuesday, January 29, 1878, at 8 P. M.

Mr. Edward R. Andrews, of Boston, will read a paper upon the decay of timber and its destruction by the *Teredo Navalis* or *Lymnoria Terebraus*, and upon processes for its preservation.

Discussion upon the subject will be expected.

Engineers and others interested are invited to be present.

By permission of the Board of Direction,

JOHN BOGART, Secretary.

WILD CAT.

We have received from a well-informed and responsible correspondent at Rosita, an indignant denouncement of the "Rocky Mountain Prospecting and Mining Co., advertised in our contemporary, the *Mining Record*, as an enterprise of the "sawdust" class, and wholly unworthy of any confidence. The parties advertising the R. M. P. & Mining Co., of Rosita, Colo., are said by our correspondent to be without standing in the community, and not to possess the property they state in their advertisement. We are referred, and in our turn refer "those whom it may concern" to any reputable citizen of Rosita, as for example the managers of the Bank or the U. S. Mineral Surveyor, or any other prominent citizen for confirmation of our correspondent's statements.

Such enterprises are most injurious to legitimate mining, and it is to be regretted that they should find admittance to even the advertising columns of any newspaper. Their prompt public exposure is, however, the surest way to render them harmless.

COPPER AND ZINC IN THE WEST.

Staff Correspondence of the Engineering and Mining Journal.

The real mineral wealth of the Western United States is exhibited as well by its yield of base as of precious metals. Already the production of lead has become so large as to exercise a controlling influence on the price of that metal; and the day is not far distant when the same will be true of copper. Zinc-blende is also an abundant ore in very many districts on the Pacific Slope, and nickel has been found in at least five localities. An extensive production of the latter metal is, however, not to be expected for some years; but we may reasonably look for the introduction of zinc works in Colorado—where, so far, blende is most common—in a year or two.

The great point of advantage in the working of the Western base ores lies in the fact that they invariably contain more or less precious metal—in most cases enough to pay for the cost of crude smelting, and in many, sufficient to cover the entire expense and leave a margin of profit besides. When this circumstance is appreciated by the hundreds of metal mining companies in the East, such as the Lake Superior copper operators and the Missouri zinc and lead miners, we can hope that a portion of the capital now drawing little or no interest from the mining sections of the States will be transferred to the more promising fields of the Territories.

Of the Western copper deposits, those of Clifton, in Arizona, are perhaps the best known, because they have been the longest worked. In point of production, however, the cupriferous vein of Butte, Montana—though it is scarcely three years since they were first opened—rank as first. These veins produce both the oxides and copper glance, together with small quantities of carbonates. They carry from 10 to 50 ounces in silver per ton. Not less than 1,000 tons, assaying 35 per cent. in base metal and 15 ounces in silver, were shipped from this district in the shape of ore during 1877. The future of the district may be judged when it is stated that not over 5,000 feet of veins are yet under work, while croppings to the extent of over a hundred thousand feet have been taken up, much of which shows the purest kind of ore directly at the surface. The country rock is a granite, and in this the veins stand nearly perpendicular. In some pyrites will probably be reached in time.

On the line between Colorado and Utah, and just south of Wyoming, lies Ewing District, a camp of which as yet little is known, but which from its favorable location (60 miles south of the U. P. R. R.,) and the purity and abundance of its ores, will not be idle many years longer. In this locality the ores are mainly, if not wholly, oxides of copper, occurring in contact deposits from 3 to 50 feet in width, and traceable by their outcrop for thousands of feet. There appears to be at least three large veins or ore courses, lying between slate and limestone. The vicinity has been carefully studied by Major Powell, who, we believe, considers the deposits of unusual extent. The ore appears to lie near the surface at least in sheets 2 to 8 inches in width, which may be cut out in large masses nearly free from gangue. It carries silver to as high as 50 oz. per ton. Samples of this ore examined at Denver show that it contains neither arsenic nor antimony. There are now several shafts being sunk on the best appearing veins, and if some capital can be attracted towards their development, their accessibility and extent will probably render them of great value.

The Peacock and Monument Mines of the Upper Snake River Valley are immense deposits or contact veins in limestone, and if but a half of the reports we get are true, these are the most extensive yet found on the continent. The percentage of metal ranges from 20 to 45, with a fair quantity of silver. The ore is a very pure black oxide. The proximity of these mines to the Snake River, which in time will be navigable by barges as far as eastern Idaho, will probably render the working of these mines a most profitable undertaking.

Besides the prominent localities mentioned, there are extensive copper mines on the Burro Range in New Mexico, near Fort Garland, Colorado, North of Laramie in Wyoming, in Southern Utah and in California. In every case mentioned the ores are mainly oxides, which can be mined in bulk to a yield of 25 per cent., and with a silver contents of from 10 to 30 ounces per ton. Comparing these with the famous Lake Superior mines, where the metal, though found native, rarely occurs to a quantity over three per cent., will make a most favorable showing for the Western mines.

The total yield of copper from mines West of the Missouri for 1877 amounted in value to very nearly $1,000,000. All of this came from true copper deposits—that is, deposits whose principal constituent was copper—excepting $200,000 worth, which was smelted from the auriferous chalcopyrite of Colorado. We think the figure for the current year will be nearly half a million more.

As regards the future of zinc in the precious metal districts, we need only study a few localities like Georgetown and Mt. Lincoln in Colorado, and Jefferson City, Montana, to form an intelligent opinion. The ores are wholly sulphides, usually associated with galena and pyrite. When the percentage of the latter is small such ores are now mainly treated by amalgamation, unless rich enough to bear transportation to smelting works. Usually the pure zinc blendes of the West are of low grade, 20 to 40 oz. When separated from the galena, they make a fair amalgamation ore. In the districts just mentioned the high grade base ores have about the following composition in metals:

	Zinc.	Lead.	Silver.
Georgetown	12	6	} 100 to 1,000 ounces per ton.
Mt. Lincoln	16	7	
Jefferson	8	10	

When passed over jigs the lead would be readily separated, and a comparatively pure blende produced, which would carry a very handsome quantity of precious metal. In Colorado and Montana, the quantity of low grade blende is enormous. As yet none is saved. There is a very promising opening, we believe, in this branch of metallurgy in the Pacific States.

MINERAL WOOL.

We have on previous occasions referred to the manufacture of "mineral wool" or "silicate cotton," by blowing steam through melted blast furnace slag. We now show, in the accompanying illustration, the apparatus in use at the Greenwood Iron Works, Orange Co., N. Y., where this most useful product is manufactured. At this furnace as a matter of convenience, the wool chamber is at a distance from the furnace, and the slag is run from the furnace into the usual slag car, from which it is drawn, as shown in the illustration. This arrangement is considered most advantageous, because the cinder as it runs from the furnace, flows too fast to be controlled and properly utilized.

The slag is allowed to flow in a thin stream across a steam-jet, and thereby is mechanically disintegrated and sub-divided in globules, the greater part of which are drawn out in their flight into fine vitreous threads, which break up easily and settle on the floor and walls of the receiving chamber—somewhat after the fashion of snowflakes in a whirlwind.

The effect of the blast in subdividing the slag is surprising. A cubic

foot of slag weighs from 160 to 190 pounds; of No. 1 mineral wool (which is the cheapest grade), 28 pounds; of No. 2, 16 pounds, and of No. 3 only 8 pounds.

The different grades as above enumerated are pressed alike, and the difference in their weight by measurement is caused by the respective fineness of fibre, and by the intermixture of shot which varies in size from $\frac{1}{8}$ in. diameter in the cheapest, to a dust-like sand in the finest quality.

The only ingredient in mineral wool, which is *soluble* through atmospheric influences, is a small percentage (about 1 per cent.) of sulphide of lime, which usually occurs in blast furnace slag, and in the wool made therefrom.

When such wool is repeatedly steamed and heated as by *leaks* in steam-pipes, this sulphide changes into carbonate of lime, which makes the wool "stick," or slightly cement together, without, however, diminishing its volume, so that when the canvas or jacket is removed carefully from a steam pipe the wool will hold on by its own adhesiveness.

For applications where this change is considered objectionable the wool should be made out of acid slag, and when to be used as a filter for acids, etc., it can be easily made from high silicates.

For general purposes, however, a nearly neutral or somewhat basic slag seems to answer best.

On account of the looseness of mineral wool its application to pipes requires some device to stuff it around and to hold it on.

These devices are so simple that any average mechanic could suggest a dozen different methods at first sight. For boilers a sheet-iron jacket —bent over the boiler before the wool is stuffed in—is undoubtedly the best covering, as it will last as long as the boiler, and costs less than the brick encasings, which, besides, occupy too much space.

A substance, to be a superior non-conductor for application on heated surfaces, should combine great air-confining capacity with indestructibility which means that it should contain nothing organic. To further substantiate these statements, a few experiments have been made after the method used by Count Rumford in 1792. The ball and stem of a thermometer were covered with an inch thickness of the substance to be tried, by placing it within a larger bulb of glass and then filling the surrounding interval between the two with the substance, and after heating this apparatus to a given degree in boiling water, it was surrounded by ice, and the comparative time required to cool the thermometer a certain number of degrees was noted. The figures following the names of the substances mark the number of seconds required respectively for cooling down the thermometer through 60 degrees Fahrenheit: asbestos, 390; cotton, 438; felt, 463; mineral wool, 770. Of course cotton has no bearing on the subject under discussion, except that it is used for domestic purposes as a poor conductor of heat, but asbestos and felt are used extensively to protect heated surfaces.

Mineral wool should be applied between 2 and 3 inches thick. The No. 1 quality is used for lining large ice-houses, brewers' vaults, etc., and is put on with best results 4 inches thick, at a cost of 12½ cents per square foot. A square foot of No. 2, two inches thick, costs 10 cents, and one of No. 3 costs 20 cents.

From these facts it is not surprising that this new product is gaining rapidly in popularity as a non-conductor, and that it is being constantly applied to new uses—for coating steam pipes and boilers; lining refrigerators and ice-houses; lining the bottoms of evaporating pans in chemical works; lining houses, deafening walls and floors; for filters for any kind of liquid, and for a great variety of other purposes of a similar nature.

Not only is the manufacture of mineral wool from what was formerly considered a *waste* material a triumph for indusrry, but the product obtained is unquestionably one of the best and most economical non-conducting materials ever adopted, and its use will certainly increase to proportions which at present would scarcely be credited. In another column we print a very interesting article on the great advantages gained by steam jacketing cylinders, and a perusal of it will no doubt lead very many of our readers to effect an economy so easily and cheaply attainable by the use of mineral wool.

Further information concerning the cost, etc., of mineral wool, and of the uses to which it is adapted, can be procured from Mr. A. D. Elbers, of New York, who holds the patents under which it is manufactured, and whose card will be found in our advertising columns.

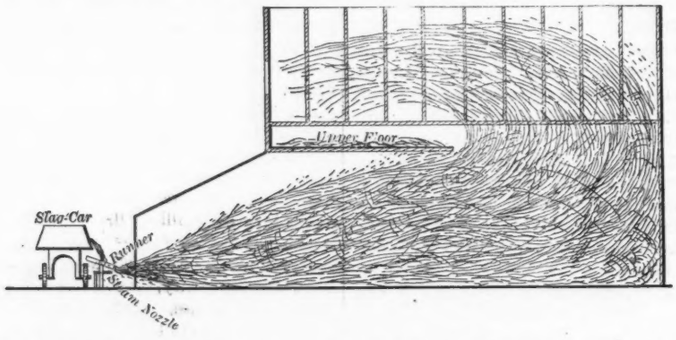
THE TELLURIDE MINES OF COLORADO.

Staff Correspondence of the Engineering and Mining Journal.

It may be doubted if any mining district in the West has been the subject of so much misrepresentation and exaggeration as the noted locality of the telluride ores of Colorado. Containing in its veins ores of fabulous richness, which occasionally were found in bunches of moderately large dimensions, showing minerals which are elsewhere so rare as to excite scientific inquiry from all parts of the world, it has attracted the attention of a great number of investors, and the notice of newspapers everywhere. Through the columns of the latter it has received such an extensive and unwarrantable puffing that its reputation is far in advance of the reality.

It requires but a few years at the outside to injure the standing of a mining district whose name and character has been pushed before the public in this manner. The fraud is ultimately discovered, and invariably a reaction ensues, which, if it does not wholly destroy the district, cripples it for years. Such was the fate of Central City in its early days; of Ophir and Tintic in Utah; of White Pine in Nevada; Silver City, Idaho, and a dozen other too much puffed mining camps. None of these named, excepting Central, have yet recovered the ground lost.

The facts regarding the telluride mines of Colorado are as follows: It is five years since the discovery of the first—the Red Cloud. During that time, hundreds of veins, carrying tellurides of gold and silver, have been found—certainly 500—and out of the list it is difficult to select more than a dozen, which to-day will pay the cost of further development, or have done so in the past. These are the Melvina, John Jay, Smuggler, Coldstream, Slide, American, Keystone, Mt. Lion, Grand View, Last Chance, and Red Cloud. Of this lot, the Melvina is the best. It has been the most successful of the tellurium mines, having been worked uninterruptedly with profit from the day of its discovery. It contains a narrow vein of very rich ore, which has proven quite regular as well as valuable. The mine is regarded by its owners to be worth between $150,000 and $200,000.



The John Jay is regarded as a good mine. It has also been continuously under work since discovery and has yielded a fair profit besides expenses. The Smuggler has produced fairly, and, being supplied with concentration works, can utilize its low grades. It is now shut down on account of a law-suit affecting its title. The Slide, Keystone, Mt. Lion and Grand View are understood to be about paying expenses. The first-named is simply being developed by drifts and shafts, and is making no effort to produce largely. The last three are endeavoring to pay for their development out of the ore taken out, and we believe are doing well.

The American is producing about 10 tons per day, from what is called the "cross-cut." This cross-cut is a drift from the American vein, through the country rock to another lode. The American vein itself, which showed such a fine body of mineral on the surface, is very poor below, and has paid no profit for a long time. No new ore body similar to the first has been found. The mineral coming out of the American shaft is from the Ajax, the lodes struck in the cross-cut. As it goes on the sorting floor, it will mill from $50 to $100 per ton. As the mine is not supplied with concentrating works, it cannot utilize its low grade rock to much advantage. The mineral is therefore hand-sorted carefully and produces enough rich stone to pay expenses and perhaps a little over. The capitalization of this mine at $1,000,000 is perhaps the most unfortunate transaction that ever occurred in the district. There is not the faintest hope that it will be able to pay continuous dividends out of its earnings. The best of the mine was gone when it was placed on the Stock Exchange.

The Red Cloud has been idle for years. The Coldstream is being prospected. Excepting the Melvina, the Coldstream has been, probably, the most profitable mine in this district while paying at all. Concerning the condition of the Last Chance we have no recent reports.

Aside from these major mines there are twenty or thirty, perhaps, which are paying their expenses in a small way, but are doing no more

because their owners have not the means to work them systematically. The balance may simply be regarded as prospects.

This is the actual condition of affairs on the Telluride belt. In spite of the glowing reports which appear in the papers there is really but one mine—the Melvina—that is paying anything to speak of. These facts are now for the first time becoming known to the public, and consequently the standing and reputation of the district is suffering accordingly. The JOURNAL has no desire to disparage any class of mines which are really valuable, and we do not wish to be understood as inimical to the interest of the Telluride mines. The district is a good one. Its veins are narrow, but rich. They require time and capital for their development, and it will not be injurious to their permanent interests to have it known that few are yet highly productive. They have lived on their reputation long enough. It is time now that something besides rich assays should be produced.

The effects of the false reports published about this district are already apparent. In Colorado confidence is almost wholly lost in all but a few, such as the Melvina and Slide. Abroad there is still some faith left, because the facts are not all known. But every man who comes from the East and takes a tour through the various tellurium camps leaves the country, disgusted with the wild stories he has read of the richness of these mines, and generally is determined rather to invest in a Chicago bank than in tellurium.

THE LEAD INTERESTS OF THE MISSISSIPPI VALLEY.

Special Correspondence of the Engineering and Mining Journal.

A true valuation of mining interests and the manufacture connected therewith is of the utmost importance, and requires a thorough knowledge of past production and a judicial estimate of relative capacity, that is, prospective production modified by changes of competition, degrees of development, facilities of transportation, improvements, etc.

Reliable statistics are absolutely necessary for legitimate trade, commerce and manufacture. To reach the true figures I would go so far as to recommend the passage of a Congressional law compelling the official, specific publication of all shipments by rail and water.

With great trouble I succeeded in obtaining correct figures on shipments of lead and zinc from Southwest Missouri, as published in the *Joplin Daily News* supplement of January 1, this year.

By January, 1879, I trust to be able to present reliable statistics on the mining interests of the whole Mississippi Valley, the district for which you have appointed me your agent and correspondent.

The lead interests of the Mississippi Valley have in the course of last year been seriously affected and damaged by false rumors of overproduction and the existence of a large stock of pig lead in New York *unsold*, and of decrease of consumption. These *rumors* did more damage than the actual large shipments of bullion and lead ore from Utah. This nightmare was held constantly over the market, kept the fine corroding lead of our district a ready prey for the Eastern corroders who used it exclusively, no foreign lead whatever having been imported for that purpose last year.

The approximate figures of Mr. Caswell's coming report given in your last issue, are as follows:

	Gross tons.
Missouri and Galena	28,000
Overland bullion	28,000
From Utah and Nevada	28,000
Utah and Nevada by water	11,000
Total	67,000

I omit the imported tons, 5,000 which were exported again in the form of cartridges, etc., and 3,300 tons used in California and exported. They cut no figure in the American market. The production in 1876 was 57,000 tons, showing an increase of 10,000 tons for 1877. In regard to this increase you say: "To partially meet this, however, the low prices have brought about a considerably increased consumption, which will become larger if they are continued. The outlook for better prices is not encouraging."

Allow me to differ from your opinion. The greatest competitor of the Mississippi Valey in the lead market is Utah, with her shipments of average poor grade bullion and lead ore. Accepting Mr. Caswell's approximate estimate, or that of the Utah correspondent of the *Inter-Ocean*, I cannot help noticing, at the same time, the reaction which has since set in and seems to play considerable havoc in all the so-called silver mines where they are depending on a high lead market for making both ends meet. Among the numerous furnaces which were compelled to close down in Utah I find several that are quoted as large shippers in 1877. Is it to be believed that they will be started again this year, when the outlook for better prices is not encouraging? On the other hand, if they cannot be worked to advantage and remain idle, will the production not proportionately decrease?

Your staff correspondent estimated, in your issue of January 5, page 9, the approximate value of the yield of precious and base metals in Utah for 1877 at $4,500,000. The *Inter-Ocean* correspondent, who knows it all by pennies and pounds, makes it $7,341,985. A slight discrepancy! Both correspondents admit the great drawback—the extremely low price of lead. Your staff correspondent says: "The rapid decline in the value of lead has operated disastrously in this State (Utah). A large number of mines have been forced to shut down, while the larger properties have made little or nothing. The bulk of the production of Utah mines is argentiferous lead, of very low grade of silver." Does that promise excessive production in Utah this year?

The *Inter-Ocean* correspondent says: "The only drawback has been the extremely low price of lead." He further reports, in mentioning the Utah smelters, twenty stacks running and twenty-three idle, among the latter many prominent shippers in 1877.

Correspondents from divers mining camps in Colorado complain constantly about the low price of lead, and state that a great many mines are and will be abandoned.

I know personally but little about the Rocky Mountains, do not doubt their wealth of gold, silver and base metals, but I feel sure that but for the assistance given to Rocky Mountain mining enterprises by the blind stock operations in the East and Europe, the mining and shipping of so much low grade lead ore would not be thought of. The money to do it would be lacking. Left to themselves, to their own resources and their economical utilization by *bona fide* companies, for *bona fide* purposes, the so-called silver mines would be real silver mines, as no others would be worked.

The Eastern stockholders must pay a bonus of about five cents on every pound of base metal shipped from mines, with just a tinkering of silver. It will take many years yet ere the disadvantages of location, transportation, cost of living, labor, and general expenditures connected with mining operations in the Great Mountains, will cease to be a barrier to the profitable utilization of the base metals, such as iron, lead, and zinc, accompanying in all their impurity the precious metals of that region.

The, in every respect, legitimate and natural development of the mining and manufacturing interests of the Mississippi Valley, meanwhile are undeservedly affected by the forced unnatural production and shipments from Utah. We have no mining stock market. Our mines change hands sometimes, but not often. If they are good, they pay too sure a dividend, and interests therein sell with ease. If poor, nobody wants them. Prospects are valued according to their development. Mineral lands are cheap and plenty; we are prepared to abide by the natural results of the development of the mineral resources of the whole country. The quality of our lead for corroding purposes is unsurpassed, even by foreign, which is no longer imported. The large shipments of low grade ores from Utah, last year, will probably not be repeated in the present. The stockholders of Utah mining companies pay their assessments in the expectation of profits on silver. Companies organized for mining silver or gold have a burden of expenses which cannot be covered by profits on lead shipments, still less by *loss* thereon.

Abandoning the aims and purposes of their organization, and attempting to square quality by bulk, they must fail after exhaustion of the last assessments. They may glut the market, but will starve themselves, which they are doing.

DIVIDENDS VS. REPUTATION.

Staff Correspondence of the Engineering and Mining Journal.

The S. F. *Stock Report*, in its issue of January 3, acknowledges with much candor that a great deal of capital which formerly went into "Comstocks" through the devious channel of the "Exchange," is now seeking investment in outside mines. The cause of its acknowledgment seems to have been the recent heavy sales of Black Hills mines in San Francisco, concerning which it says that "though the amounts individually are small, they may amount to a million in the aggregate, and even then represent but the root of a *great and growing evil*." The italics are our own. Our contemporary then delivers itself with evident jealousy on the subject of the Black Hills mines, claiming that they are of little account anyway and have no "reliable reputation."

This is the whole point. Intelligent mining operators—those who invest for the sake of making money out of the mines—are thoroughly wearied with these properties, whose entire capital, stock-in-trade and produce consists of reputation. This quality has had its day. What is wanted now is dividends and profits, and if Black Hills mines will produce these they will draw capital. The game on the Comstock is now too evident to deceive any but the fools. The newspaper seers of San Francisco have been prophesying week after week for nearly a year regarding Ophir, Alpha, Alta, Mexican and the other ne'er-do-wells of the Lode, but the bonanza which is looked for still remains a foot or two in advance of the workings. In addition to these continual disappointments, which must prove a terrible drain upon the resources of the Comstock editors to explain, hardly a week passes without revelations of extravagance, embezzlement and trickery in the expenditure of the millions of dollars annually drawn from the pockets of stockholders in the way of assessments.

Our contemporary comforts itself, and endeavors to comfort others, with the statement that Comstocks are gaining favor in the East and Europe, and that money for development is coming in rapidly from those directions—fully enough, it says, to counterbalance that which has gone to the Black Hills or elsewhere. One would think that California State had had enough of Eastern capital for a while at least. Was not the Exchequer experience sufficient for a time? We can assure our contemporary that if more of this Eastern and European money is on its way to California for investment in Washoes it is likely to be the same quality of currency as that on which the Exchequer pool was built.

The Comstock now belongs practically to the Bonanza Firm and to Sutro. There is money in the great lode, of course, so there is in a faro bank, but it is entirely another matter to get hold of it. Flood & O'Brien hold all of the dividend stock, while the public are plentifully supplied with assessment paper. Once in a while the latter are allowed to make a few thousands to encourage them. Ultimately, however, the bonanza kings sweep in everything.

It is natural, therefore, that the capitalists of California, who have made their money in mining, who have confidence in the industry which has built up the West, and who are not fools enough to exhaust themselves in an unequal contest with the millions of the Nevada Bank—it is natural that these men should seek for investments outside of Washoes. They have already invested heavily in Arizona, Utah and the Black Hills, and we hope they will be attracted to Montana and Colorado. Idaho also offers many inducements for the moneyed men of San Francisco, but unfortunately for that territory, nearly all its finest mines are already swamped by the demons of the Stock Exchange. In their absence California Street and our contemporary will have to struggle for the earnings of the boot-blacks, news-boys and domesties of the city, unless they are so happy as to induce another visit from capitalists such as those of Exchequer fame.

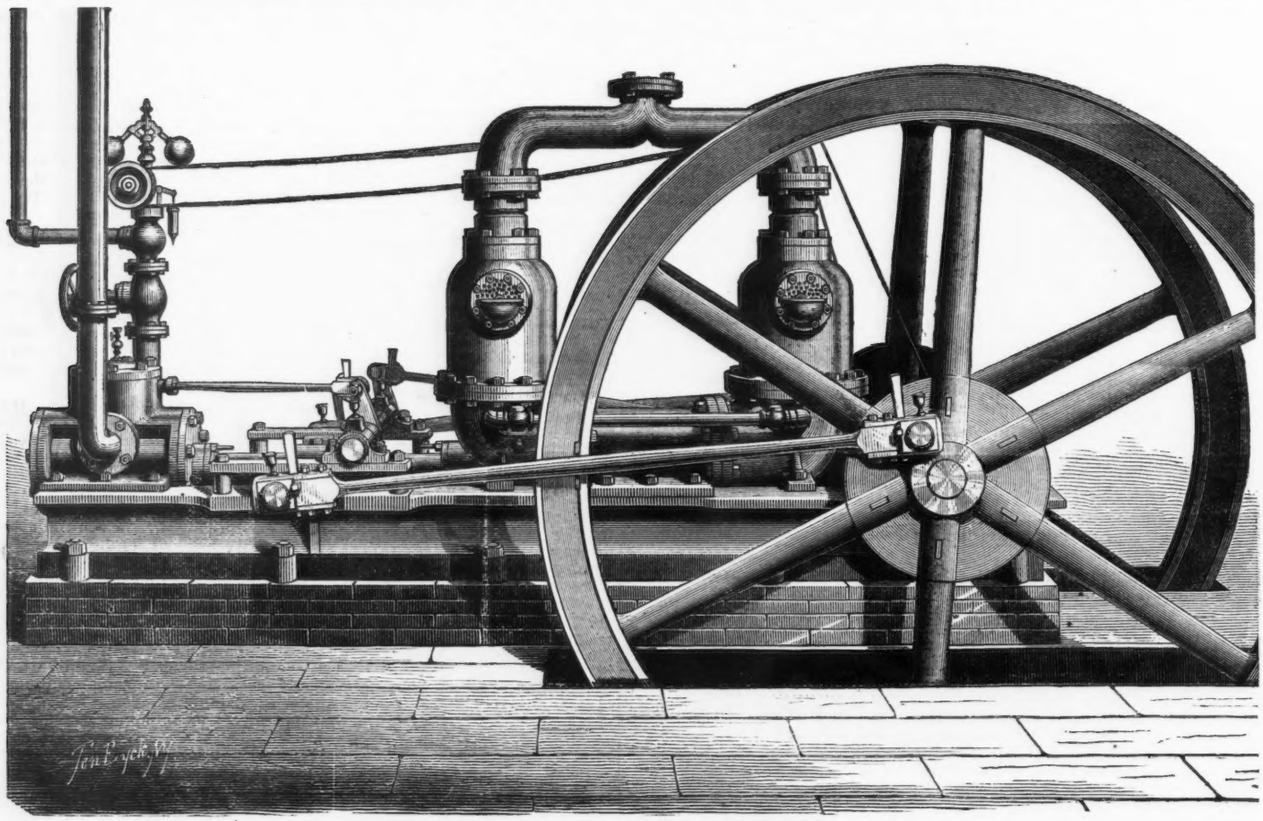
THE COAL FAILURES IN CHICAGO FOR 1877.—Twelve coal dealers, with aggregate liabilities amounting to $597,437, were placed upon the list of failures in Chicago during the past year.

BOWERS' AIR COMPRESSOR.

The great advantages which compressed air possesses over steam as a motive power in mines is becoming more and more generally recognized, and its use is being greatly extended. In our Western metal mines, where ventilation is not carried out on the grand scale required in our fiery anthracite pits, compressed air used in driving rock drills and other underground machinery is a valuable auxiliary to the small furnace or "natural" ventilation commonly in use there. The destructive effect of steam upon timber, and even on certain kinds of rock roof in the mines, makes its use undesirable, and still further contributes to the growing popularity of compressed air.

The accompanying illustration shows a new form of compressor, which has already been adopted with success in a number of Utah mines, among which are the *Prince of Wales, Toledo, Old Telegraph* and *Desere*, and the *New York Hill Mine* of Grass Valley, Cal., and is very highly spoken of by those who have used it. The cut needs but little explanation.

Above the air cylinder are two distinct air chambers, each having two induction or receiving valves, which cushion on rubbers. With the movement of the piston these chambers alternately receive and force the compressed air through check valves placed in the upper part of the air compartment, both compartments being connected with one pipe conveying the air to the ordinary air receiver. These check valves lift alternately, and cushion on water; and as the compressed air is forced into the pipe connecting with the receiver, without a possibility of any of it escaping back into the receiving chambers, it is claimed that there is the smallest possible loss of power, and that the machine will give 90 per cent of steam power expended in the shape of compressed air. The compressor is compact in form, strongly made, simple in construction, and not liable to get out of order. One peculiarity in its construction is that no water jacket or hollow piston is used; yet under any of the extreme pressures to which the machine has been tested, no inconvenience, we are informed, from heat has been perceptible.



BOWERS' AIR COMPRESSOR.

In connection with the compressor, receivers are used into which the air is pumped and thence conveyed by pipe to the location where required, even if it be a mile or more.

The manufacturers also build water-power compressors, one of which, driven by 75 to 100 horse power, they have recently shipped to Utah. The machine is intended to convey the air through iron tubes 5,000 feet to the mouth of a silver mine, where a 50 horse power hoisting and a 25 horse power pumping engine will be driven by air instead of steam, and a tube will be extended into the mine 1,000 feet deep, where the power drills and small pumps will be operated by air also.

At the Prince of Wales Mine, Alta City, Utah, the compressor runs 10 hours per day, and supplies compressed air to two 3 inch drills used in running levels. The distribution terminates at distances of from 1,000 to 2,000 feet from the compressor. The machine also drives one hoisting engine and ventilates the lower part of the mine. The main supply pipe is three inches in diameter, 2,300 feet long, and is tapped by two inch pipe wherever power is required. The expenditure of fuel is one cord of green pine wood and 600 lbs. of bituminous coal per 10 hours. Air pressure in receiver 100 lbs. This pressure is reported to be obtained by 70 lbs. of steam as indicated by the gauges.

Those desiring further information can address the manufacturers, Messrs. Griffin & Wedge, of Zanesville, Ohio, whose card appears in our advertising culumns.

SOME ERRORS IN "MINUTE MEASUREMENTS."

By N. S. Keith, of New York City.

Prof. A. M. Mayer, in the *Scientific American* supplement No. 107, January 19, 1878, treating of the effects of magnetism on bars of iron and steel, arrives at conclusions which are faulty, by reason of failing to take notice of all of the conditions involved in his experiments. The experiments illustrate one of his series of papers on "*The Minute Measurements of Modern Science.*"

After describing the Saxton's Comparator used in the measurements, and the size, weight and preliminary treatment of a number of rods of iron and of steel on which magnetism is to show its effects, and the galvanic battery, the helices for enveloping the rods during magnetization, and the general plan of procedure, he deduces theories which he states as conclusive laws, and also tabulates the measurements made. Exception is taken to these for reasons which are set forth herein.

There is no fault to find with the apparatus, nor with the management. Care seems to have been taken with such preliminaries as are stated, but not enough were observed. The internal resistance of the batteries should have been taken, as well as the resistance of the helices. The resistance of the electro-magnetic arrangement of the helices, and at least one of the rods, should have been taken as well; then either the current passed, or the electro-motive force of the battery should be known, and the time of closed circuit in each case. From these data the amount of heat imparted to the helices and rods can be calculated.

The electromotive force of the battery, "25 Bunsen cells placed 5 in series and 5 in couple," is approximately shown in that statement, but not sufficiently exact for minute measurement. Such an arrangement might vary in electromotive force between 8 volts and 9·5 volts, by reason of differences in the constitution of the carbon and zinc elements, the purity of the acid: and the time in which it had been employed in closed circuit.

The resistance of the helices joined as one is stated as ·75 ohm, without any rod or core. With one of the iron or steel rods in the helix, this resistance must be greater during the time the rod is acquiring magnetism. When the maximum of magnetism is reached, the resistance of this electro-magnetic arrangement will be that of the helix alone. The amount of energy used in overcoming the resistance of the rod is absorbed by it, and is held as a static force until the break of circuit, when it is given off as heat; slowly by conduction and radiation. This is the heat of demagnetization.

As magnetism is a static force, the slightest electro-magnetic current is sufficient to preserve it; even one far too weak to confer it in the same amount. This is a known fact, and accounts for the "new phenomenon of magnetism," thus stated by Prof. Mayer: "If a strong current which has procuced an elongation in a rod be gradually diminished till it is very feeble, the rod remains elongated till this feeble current is broken, when the rod suddenly retracts."

If electromotive force be shown, and resistance of the circuit, we can

arrive at the current, and then the amount of energy set free in the circuit, or in any portion of known resistance of the circuit. For example:

Let the battery in question represent an electromotive force of 8 volts; the internal resistence ·75 ohm; the resistance of helix without core, ·75 ohm, as stated, and with a rod, as a core, enclosed an additional resistance of ·50 ohm; let the time be one minute. The total resistance is then 2 ohms.

$$\text{Now, } \frac{8 \text{ volts}}{2 \text{ ohms}} = 4 \text{ vebers, current.}$$

A current of 4 vebers with electromotive force of 8 volts during one minute represents 1912 foot-pounds of energy, or 2·48 heat units. This is sufficient to raise the temperature of an iron rod weighing 1520 grammes, as in this case, ·0104° centigrade per second. But as the time of elongation (and presumably the time of magnetization) is stated as $\frac{1}{10}$ second, and as we have assumed the resistance of the rod to be ·50 ohm, or ¼ of the total resistance we have the formula $\frac{·0104}{10 \times 4} = ·00026°$ C., increase of temperature of rod by a single demagnetization.

As the energy of magnetization is definite the setting free of the energy by demagnetization must be shown by a definite amount of heat, whether done suddenly or slowly.

This is as much so as that the heat of oxidation is the same whether slowly or quickly done. Or that as much force is necessary to raise a pound a foot high in an hour as in a minute.

The influence of heat set free in the helices during these experiments is not considered at all by Prof. Mayer.

This is important, as the heat due to passing electric current through them is 50 per cent. more than the heat due to the demagnetization of their core, if the resistances be as we have just considered them for example. And as the current seems to have passed through them many times during a short time, and for a greater length of time than was requisite for the magnetization of their cores, the proportion of heat in them must be far greater than as 50 to 75, the relative resistances of helices and core. Some of this heat by conduction and radiation must pass to the rod. At any rate the rod must be in an atmosphere warmer than that of the room in which the apparatus is placed. This condition continues until the current ceases, and the apparatus and room come to equal temperature. The length of time required for this *may* account for part of the greater length of time requisite for retraction than for elongation. It is certainly sufficient to make Prof. Mayer's deductions erroneous, though valuable as data upon which to base future research.

It is not attempted herein to deny or question the statement that iron and steel are changed in measurement by magnetism, either momentarily or permanently, nor that they are heated by demagnetization; but simply the reliability of these measurements and deductions are questioned for the reasons stated. How much of the elongation is due to heat, and how much retraction and elongation is due to magnetism is not set forth by Prof. Mayer.

The statement that "heat developed in the rod, at the instant of demagnetization, leading (*sic*) to an explanation of the superiority of the armature of the Gramme magneto-electric machine," and the subsequent statement: "These facts explain why armatures, like those in Saxton's and Siemen's magneto-electric machines, heat very readily by reason of their *sudden* demagnetization, while those armatures, like that of the Gramme type of machine, do not heat, for the latter have their magnetism continuously and gradually let down in intensity," is denied. They do nothing of the sort.

The Gramme armature does heat. A certain amount of heat is always developed in an electric circuit from a definite quantity of current, and a definite resistance. If the current be small the heat will be proportionate, so that conduction and radiation may balance it before it rises too high.

The Gramme armature, and some others having the closed circuit, for instance, the one made by Wallace & Sons, Ansonia, Conn., and the new one made by Siemen's Bros., England, are not so closely enveloped by the magnetic poles, and are of such a size and shape that heat is more readily conducted from them than in the case of the old Siemen's armature used by Wilde, Ladd, Hochhausen and others

The author of this is as great an admirer of the Gramme machine, or, more especially, of the principles involved in its construction, as is Prof. Mayer, but he speaks from practical knowledge, not hearsay. Whatever superiority the Gramme machine may have is in quite another direction. Manufacturers of magneto-electric, or, more properly, dynamo-electric machines, at the early start had for their trade-mark, almost, "our machine does not heat." But experience proves that they do when run so as to get anything like the maximum current from the combination of iron and copper of their constitution. The only ways which have been found is to keep the current low enough or cool by water or air currents.

In all the armatures, the old Siemens', the new Siemens', the Gramme and the Saxton, there are two complete reversals of molecular polarization during one revolution. With the same speed of revolution in all there are the same number of demagnetizations, in the same time. If the other conditions, namely, resistance and current, are the same there will be the same amount of heat. In the Weston machine, having six magnetic poles, there are six reversals of magnetism to each revolution.

THE LITTLE ANNIE MINE, SUMMIT, RIO GRANDE COUNTY, COLORADO.

The Highest Gold Mine in the World.

We take the following interesting and valuable notes from an elaborate report by C. E. ROBINS, treasurer to the footowners in the Little Annie Mining Company:

The Little Annie, Del Norte, and Margaretta Mines, lie near the summit of the Sierra Madre, or main range of the Rocky Mountains, at a mean elevation of about 12,000 feet above the sea. The company's placers, situated in the valley between South Mountain and Summit Peak, and the little Annie Mill, are about 11,230 feet above tide water. The latter is the highest gold reduction works in the world, as the group of mineral claims on South Mountain are the loftiest gold mines worked or known. Within four miles from the company's office, water flows by the affluents of the Rio Grande into the Gulf of Mexico, and by those of the Rio San Juan into the Colorado and Gulf of California.

During the twelve months ending with November 1, 1877, there were at the Summit only 110 days when any outdoor work, save felling timber, was possible; in other words, 8⅓ months of the 12 were winter, the ground so heavily snow covered that getting about, save on snow shoes, was impracticable. The average annual temperature, as taken between 7 o'clock A. M. and 9 o'clock P. M., is 32° + Fahr. Annual snow fall, 24 feet. The climate does not agree with all persons; both the light air and the continuous cold of the long winters tell upon some constitutions after a prolonged stay. July has been during three years the only month without snowfall. The relation of the foregoing facts to both economical and continuous work are obvious. The present population of the district is 21.

The Annie Mill commenced its first run September 28, 1875, and made during that year 61 days gross time, realizing a product of $28,074.84 in gold, and dividing $3,480.02 among the footholders.

The results of 1875, all things considered, were favorable, and were generally so regarded by those interested.

In the spring of 1876, the snow was eight feet deep on the level, but the work of getting down ore in rawhides and on sleds commenced, and in this manner there was transported down the mountain to the mill dump, between April 23 and May 15, 216 tons, 428 lbs. of quartz, which the mill commenced to crush May 20. On May 5, the first party of tramway men reached here by way of the Alamosa in a very heavy snowstorm, which continued until the 8th, when work on the South Mountain Railroad was begun by felling timber for the track. On the 9th, eight carpenters arrived, and the work was pushed steadily forward until its completion on July 1. Length 2125 feet. Work done by contract; bids ranging from $7.50 to $1.50 per foot—built at latter figure in heavy snow, and for the most part in heavy storm; no money made by contractors.

On June 8 the first burro train of the year arrived at the Summit, with goods for the Annie store. On June 16 we cut through the top of the last of the snow tunnels made during the previous winter for communication between the buildings. The first wagon of the year reached the Summit on the 17th. Delivery of ore by tramway during 1876, amounted to 1,469½ tons. Wood bought and used during the twelve months following April, 1876, was 1,303 cords; cost, $3,909.39, = $3 per cord. Net running time of Little Annie Mill, in 1876, was 4,777 hours and 56 minutes, = 199 days, 1 hour, 56 minutes. Gold production $63,557.50. The ore house adjoining the Annie Mill, on the south, 42 feet square, capacity 2,500 tons, was begun September 20, and finished October 9. The gulch yielded, in 1876, $518.25, at a cost of $229.12.

In 1877 the mill ran until March 14, when it was shut down for repairs and want of quartz, and the camp was deserted save by parties left in charge of the property. The spring snows were as exceptionally heavy (12 feet) as those of the winter had been light, and transportation, or outside work of any kind, save snow shoveling, was impossible until June 23. The superintendent and the writer reached here on snow-shoes on the evening of May 21. For a month all hands were engaged in shoveling snow from around buildings, and to open road and tramway, both buried up six to nine feet.

F. H. Brandt arrived on June 8 in one of the heaviest and most prolonged snow storms ever known at the Summit. On the 15th the snow around the company's office was level with the eaves of the building, and the writer walked over the roofs of the adjoining outhouses on snow shoes. The first rain of 1877 was on June 18. The tramway delivered its first car load of ore on June 23, and the Annie Mill recommenced to run on the 25th.

Sluicing in the gulch was commenced on July 2, an average of three hands being employed, and ceased on October 12. Of the results of this work you are already advised, under abstract No. 8, "Placer Retort No. 1." Its total cost was $538.95. July 27 the Pan Mill, erected by Schrontz & Russell, commenced work on Annie and Queen tailings. It was a foolish enterprise, pursued by a foolish method. After a run of eleven days it shut down, having gathered a considerable quantity of ferrous amalgam. Two short runs were subsequently made, with negative results as to profit, and the outfit was abandoned by its owners. The mill is now dismantled, boiler and engine removed from the district, and what little is left, for sale on behalf of creditors.

August 3 brought the first snow of the winter of 1877–8, though no heavy snow storm occurred until October 11, when 19½ inches fell. In 1877, so far, 1,881 cords of wood, costing $4,788.63, have been delivered to the Company; average, $2.54 per cord; paid in full. The Golden Queen Mill commenced running for the Annie Company under lease at 4:30 P. M., September 15, and stopped for the season at 2:47 A. M., November 5, making between the dates named 1,081 hours 3 minutes net running time, and crushing 382 tons of rock=8½ tons per 24 hours. Gold product, $4,580; cost of same, $1,945.89; yield per ton, $11.99; average yield of Annie Mill during same time, $30.51 per ton.

The results of outside crushing this year were given in detail up to that date in Abstract of August 4 last. The final figures are, in brief, as follows: Tons crushed, 1,024½; cost of same, $8,763.18; gold product, $10,507; cash gain, $1,833.82, or $1.78 per ton; 1,024½ tons ore in Little Annie Mill at her rate of yield during same time ($23.55 per ton), $24,126.97; less $10 per ton for crushing, 10,245=$13,881; 13,881 less $1,832.81= $12,048.18 loss on ore, aside from mining and tramming, the two latter items amounting on 1,024½ tons to $2,305 more. The tramway has so far in 1877 delivered 3,080 tons of ore to the several mills. A 100 foot tunnel into the southern face of the Annie Mine, contracted for at $7.50 per lineal foot, was commenced on October 15, and will be completed within a fortnight. A considerable part of the cost is paid in merchandise at a profit.

METHOD OF BUSINESS.

As before stated, the first office work done here was the organization of a proper system of accounts and business routine for the two companies in charge, and the ascertainment of the cost of the two mills. The latter should have been finished by the contractor, and was outside of the treasurer's duties; but it was regarded as important—not only as a matter of satisfaction as between the contractor and the parties furnishing money for their erection, but to the footholders in the two companies, in connection with taxation and insurance (especially in case of loss by fire if followed by an adjustment), and of future sales of interests. The propriety of the work done to obtain a correct result under this head is shown by the fact that the contractor's estimate of their cost was a little over $16,000 out of the way. Mill cost settled, the following order of business was adopted and has since been pursued:

1. Amalgam as collected from the mills is brought to the office and put

in the safe. (Before the safe came, kept under the bedstead. Many thousands of dollars' worth were so kept, and kept safely, before a safe was furnished.) Before retorting, the amalgam is weighed, and the gold weighed afterwards, sacked and sent to the bank, labelled as per enclosure marked A.

The following excerpt from Retort book shows how this preliminary operation is stated in each case:

"1877, Little Annie Mill.
October 4. Retort No. 50.
Time, 9⅜ days.
Tons, 53.
Amalgam, ounces, 487,500.
Gold, ounces, 117.000.
Gold, per cent. of amalgam, 24.02.
Present at the weighing, Peterson & Robins.
Quality of gold, fine.
For Cr. at bank, $2,300.
——— Sent to bank of San Juan by C. O. Anderson, October 6, 1877.
Jour. B. 164. Exc. Jour. B. 179."

From this statement, proper journal entries are made at once in bank and retort accounts, and in bank and exchange accounts upon receipt of Mint certificates and account sales of the gold.

The *Messenger* on receiving the retort, gives a receipt in the following form:

"Summit, Colorado, Saturday, October 6, 1877. Received of C. E. Robins Treasurer Little Annie Mining Company, proceeds of retort as follows: No. 50, Little Annie Mill, 117 ounces Troy gold, worth $2,300, coin, for delivery to the Bank of San Juan, at Del Norte, Colorado. CHARLES O. ANDERSON."

The messenger takes a similar receipt from the bank. A letter is written to the bank by mail, stating the facts embodied in the receipt. The retort is sent by the bank to the United States Assay Office at New York (formerly to the mint at Denver), where it is fined and barred, and the result handed over to the New York correspondents of the bank, and by them sold for currency, they forwarding to me the certificate of the Assay Office, and their own account sales These are compared with the entry on the retort book, figured up, and, if found correct, proper entries are made for express and mint charges, and premium in exchange account. The full set of vouchers, as above stated, in connection with every retort made by or for the Annie Company, is on file here.

2. No money is paid out under any circumstances without a signed voucher. Bills of every description are carefully audited, and correction made when wrong, or, if the claim is improper, rejected entirely. After audit they are either paid or passed to credit, in either case endorsed "Jour. B., page —," placed in invoice book and indexed. The larger proportion of payments by the company are made under the form enclosed, marked B. The check stub (check payable to order), corresponding to this voucher, reads as follows:

No. v. v. v.
September 5, 1877.
Kelsey Porter,
Voucher of this date,
Wood account, 1877.....$494.94
Journal B, 156.

The foregoing is the method followed in all cases of payment. The company's store books are double entry, accurately kept, and all employes' accounts are settled and paid monthly as shown on B. Bills of every description (save a few running merchandise accounts occasionally left open pending correspondence or receipt of goods) are paid monthly when not paid on sight. The books at store and office are always "up," and we are at all times ready for settlements. Payments by merchandise on which a profit is charged discount by a considerable sum annually, the face of a large class of our obligations.

The journal entries of each transaction are full, and, with the vouchers always taken, and other collateral evidence recorded or filed—references and settlements are alike easy and prompt. One result of the thorough systemization and method of the company's business is, that we have no disagreement or trouble in our settlements. So far as we know, not a man has ever closed an engagement or a transaction with the Annie, chuckling over a dishonest gain, or feeling that he had been dealt by unjustly. People in *this* country *believe* in the Annie; its best friends are those who have had most to do with it.

But two cases of disagreement on business issues have arisen since the Company began its work, both cases of attempted fraud. If they cost the Company anything it will be because its earlier records are not here.

Shipman Files are used for all Company papers, and every paper is indexed. There is not a single transaction since December 20, 1875 (set *B* of the Company's books), of which every factor cannot be shown. No bank in the City of New York or elsewhere has, and has always had, since I first balanced set A of the Annie books, a more thorough or better classified set of accounts, or a better ordered routine of business than has the Annie Company here. I am a judge of this class of work, and know whereof I speak. The Annie management from the first (I do not, of course, count the contractor in this, for after the mills started he managed nothing), has been brighter than its gold. It is all of record, and ready, any time, to be turned up to the sun.

(TO BE CONCLUDED IN OUR NEXT.)

THE AMBER MINES OF PRUSSIA.—Not less than 135 tons of amber had been dug up in Prussia last year. The productive mine of Palmnicken alone gave 85 tons. The amber industry gives employment to about 1,400 men. Austria, France, Russia, America, China and Japan are the countries which absorb most of the product.

THE PAUCITY OF OUR IRON AND STEEL DISPLAY AT THE PARIS EXHIBITION.—PHILADELPHIA, Jan. 21.—The Secretary of the American Iron and Steel Association has ascertained that scarcely any American manufacturers of iron and steel, or of locomotives, iron bridges, machine tools, or other machinery, have applied for space at the Paris Exhibition. The manufacturers of saws, cutlery, and hardware are also neglecting to make application. Unless immediate steps are taken by the representatives of the above industries to secure a creditable display, the probabilities are that the American iron and steel exhibit will be a failure.

A NEW COAL FIELD IN NEVADA.—The *Lyon County Times* says: "A party of miners who have been out in the Walker River country, Esmeralda Co., Nev., working on a small silver ledge, which they thought would develop into something better when depth was attained, have made a discovery of vast importance, if all we hear is true—coal of good quality and extensive in deposit. We are informed by one of the party that the new coal mine is located five or six miles beyond Wellington, and within two or three miles of a railroad survey. The deposit lies in sandstone and shows in the face of their tunnel four feet of solid coal, on top of which are a few inches of sandstone, and then there are about four feet of coal and clay mixed.

ON THE INFLUENCE OF STEAM-JACKETS.

By Mr. E. Cornut, Engineer in Chief of the North of France Association of the Proprietors of Steam Boilers.

[Translated from the Bulletin of that Association, for the years 1873-74, for the "Engineering and Mining Journal," by Chief Engineer Isherwood, U. S. Navy.]

We have been asked since the beginning of the year to investigate the influence of steam-jackets, one of the most important problems affecting the economy of the steam-engine.

Some years back the utility of a steam-jacket (one of the inventions of Watt) was generally admitted by engineers, and both vertical and horizontal cylinders were fitted with it. Later, however, the good effect of the jacket has been contested and its utility denied, so that we have now to ascertain which of the two opinions is erroneous.

Mr. Hirn, in a very remarkable paper, shows that a vertical condensing engine functioning with the same boiler pressure and using the same measure of expansion, produced 23·5 per centum more power when the jacket of its cylinder was filled with steam. With absolute equality of weight of steam expended in equal time, the power increased 23·5 per centum by the use of the steam-jacket; but what is most important to know is the real economy obtained, for the steam in the jacket evidently radiates heat externally, undergoing an equivalent condensation; further, any benefit derived from this steam envelope must be attended by some condensation; and the two partial condensations diminish the economy. It is, of course, understood that the resulting water of condensation is returned to the boiler. Under these conditions, Mr. Hirn, by taking as a basis the quantity of feed-water necessary per hour for the production of an indicated horse-power, found, definitely, an economy of 22·2 per centum.

In 1843, Mr. Combes, Inspector General of Mines, addressed to the Institute a memoir on the experiments he had made for ascertaining the effect of steam-jackets. He experimented with one of Farcot's engines, but under conditions very favorable for the steam-jacket, as the engine was lightly loaded and the steam cut off at one-twentieth of the stroke of the piston from the beginning.

Mr. Combes operated the engine:

1st. During four days with steam admitted to the jacket in the ordinary way; the water of condensation flowing from it through a properly regulated cock. The steam from the boiler was first delivered into the jacket and thence passed into the cylinder.

Then, during three days, the jacket received steam directly from the boiler to which the water of condensation was returned; but the cylinder received steam, also, directly from the boiler.

2d. The engine was operated during three days without steam in the jacket; the cylinder receiving steam directly from the boiler.

The first trials lasted 75¾ hours with an average consumption of 30·150 pounds of feed-water per hour per indicated horse-power. The second trial lasted 33½ hours with an average consumption of 47,402 pounds of feed-water per hour per indicated horse-power; and the difference in favor of the jacket was

$$\left(\frac{47{\cdot}402 - 30.150 \times 100}{47{\cdot}402.}\right) = 36{\cdot}4 \text{ per centum.}$$

This result is much greater than the one previously cited, but it is necessary to remember that the steam was cut off at one-twentieth of the stroke of the piston; and that the effect of the jacket, according to usually received ideas, should become more strongly marked as the measures increase of the expansion with which the steam is used.

In England, this question is also much discussed, and I think I should give some of their results.

Mr. T. R. Crampton has experimented in conjunction with Mr. Humphrey, on a compound engine whose cylinders compared in capacity as 1 and 4. Both cylinders were steam-jacketed, and the steam was cut off at one-sixth of the stroke of the piston from the beginning. The power of the engine increased 30 per centum when the jackets were filled with steam. I have not been able to ascertain the real economy, which was somewhat less than this figure.

Mr. A. Mallet, engineer, who has investigated a number of marine engines, thus sums up his conclusions: "The utility of the steam-jacket is incontestible, and it is so much the greater as the difference of temperature is greater between the sides of the cylinder and the in-flowing steam. Accordingly, the jacket will be more advantageous for condensing than non-condensing engines; for larger measures of expansion than for smaller ones; for engines with one cylinder than for compound engines."

Mr. Leloutre has obligingly sent me a portion of his memoir now in course of publication in the *Bulletin de la Societe Industrielle de Lille.* The results of his experiments made at Mulhouse show an economy in favor of the steam-jacket varying from 15 to 25 per centum, according to the conditions under which the engine was operated.

The *Bulletin de la Societe Industrielle de Mulhouse* contains, in the December number of 1873, a memoir by Mr. Hallauer of the experiments made on duplicate Corliss engines, the one with and the other without steam-jackets. The economy realized in the weight of steam consumed per hour per *total* horse-power by the steam-jacketed engine was 23·75 per centum.

It will be perceived from the figures already cited, that the Council of our Association could not undertake the study of any subject more important for our industries; and I, therefore, state some additional facts.

A manufacturer of Roubaix employs two compound engines in his establishment. The steam which supplies their jackets is taken directly from the boiler and is afterwards used for heating some special apparatus, the arrangement of the pipes being such that the jackets can be filled with either saturated or superheated steam. One morning, the engine being much loaded, and making with difficulty the 20 revolutions per minute, which were its regular rate, the engineer thought he would try the use of superheated steam in the jacket instead of the saturated steam; operating the change, he beheld, to his astonishment, the engine make from 21·5 to 22 revolutions per minute, that is to say, an increase of nearly 10 per centum. This accidental experiment is very curious, for it proves what is not admitted by the opponents of steam-jackets, namely, that there is a transmission of the heat of the steam in the jacket across the metal of the cylinder, and, by consequence, an increase in the work done by the steam in the cylinder.

In the dynamometrical experiments we undertook on a compound engine, we were able to operate it both with and without saturated steam in the jackets; and in both series of experiments we were able to keep the engine at a constant speed with a constant measure of expansion by means of its connection on the same shaft with a duplicate engine. The boiler pressure during the first series of experiments, namely, those made with steam in the jackets was 6·26 atmospheres; and in the second series of experiments, namely, those made without steam in the jackets, it was 6·72 atmospheres. The power developed, as shown by the indicator diagrams, was 20·75 per centum less when the engine was worked without steam in the jacket, although in this case the boiler pressure was greater.

An inspection of the indicator diagrams shows that when there was no steam in the jackets:

1st. A very sensible diminution of the steam pressure at the commencement of the stroke of the piston of the small cylinder.

2d. A considerable diminution in the work done by the expansion of the steam in the large cylinder.

3d. Sensibly greater losses of pressure in the steam passage between the small and large cylinders.

I will now cite a last fact. There is at Bleyburg, a powerful compound pumping engine, the steam-jackets of which being temporarily out of use, the engineers of the company reported a greatly increased consumption of coal.

It should be observed that I have given results which have been practically ascertained with the greatest care and perseverance, and I should add that all which is known to me of objections made by the opponents of steam-jackets, is rather theoretical than experimental. I would particularly cite the remarkable writings from a scientific standpoint of Dwelshauvers, Rankine, Hildebrand and Stapfer.

The objections to the steam-jackets are:

1st. That but little or no heat is transmitted from the steam-jacket to the cylinder; which is not exact.

2d. It is not admitted, in general, that there is re-vaporization in the cylinder of the water from the steam condensed during the work performed by the steam.

This fact is beyond doubt for the great majority of engines, and an example of it will be found in the report of our experiments on the Ingliss engine of one cylinder.

3d. These critics add that the first cost of the engine is greater with than without jackets, and that there is difficulty in obtaining jackets which will not crack easily.

The second part of this objection will not have much force in our country, which possesses builders, so to speak, of European reputation, who have shown by the great number of horizontal engines constructed with steam-jackets and with Farcot's or Meyer's cut-off, that they have long since overcome that difficulty.

In view of all these facts, some special experiments should be made on the new engines known as American engines, to determine the economy possible from the use of steam-jackets. We have undertaken a series of experiments on an Ingliss engine having a steam-jacketed cylinder, and are conducting them from an essentially practical point of view. These experiments will be published in full; at present I will cite only the results:

The engine was operated during an entire day with steam in the jackets, and during an entire day without steam in the jackets. Indicator diagrams were taken every fifteen minutes from both ends of the cylinder, and the feed-water pumped into the boiler was directly weighed. The following were the results, the water primed or foamed over being deducted.

First day.—Working the engine with steam in the jackets. Number of pounds of feed-water consumed per hour, per indicated horse-power developed, 25·531.

Second day.—Working the engine without steam in the jackets. Number of pounds of feed-water consumed per hour, per indicated horse-power, 31·561.

The difference in favor of the steam jacket is

$$\left(\frac{31{\cdot}561-25{\cdot}531\times 100}{31{\cdot}561}\right)=19{\cdot}10 \text{ per centum.}$$

It would certainly be more exact to determine the number of calories utilized by the engine under the two very different conditions, and that method would give an increased difference in favor of the jacket; but we have preferred to give the figures relatively to the unit universally known and employed.

Can this difference of 19 per centum be accepted definitely as the economy due to the employment of steam jackets? We think not. The influence of the jacket varies with the variable elements of each engine, and especially with the measure of expansion employed for the steam, and with the conformation of the jacket itself. Nevertheless, we believe that with the steam cut off at from one-sixth to one-tenth of the stroke of the piston from the beginning, and with a well constructed jacket receiving the steam directly from the boiler, an economy of from 15 to 20 per centum can be obtained.

We shall continue this investigation on the best known types of engine in our country, and shall make known the results.

Note.—In the succeeding bulletin, at the close of the decription of the very complete experiments made on an Ingliss engine, Mr. E. Cornut concludes as follows:

In the general report of last year, we called attention to the important subject of steam-jackets as regards economy. The investigation we have just made with that engine furnishes new proof of the utility of the jacket. Comparing the consumption of feed-water per hour per *total* horse-power during the trials, with and without steam in the jackets, we find:

1st. Consumption of feed-water, without steam in the jackets, 24·689 pounds.

2d. Consumption of feed-water with steam in the jackets, 20·041 pounds.

The steam-jacketing consequently produced a difference of

$$\left(\frac{24{\cdot}649-20{\cdot}041\times 100}{24{\cdot}649}=\right)$$

18·69 per centum in the consumption of steam by the engine.

During the present year we have made many trials with engines having steam-jacketed cylinders, and always found a considerable economy resulting from their use.

CORRESPONDENCE.

THE METER AS A STANDARD.

Referring to Gen. F. L. Vinton's article on "The Meter as a Standard," p. 452, last vol., I beg to remind that gentleman that there is no absolute measure, weight or time on this globe, or anywhere else. Even if, for example, the attraction of the earth and the length of a certain pendulum on a certain spot of the globe could be measured exactly, these figures would be changed in say 10,000 years, and that identical spot, before on the coast of the ocean, would be 100 or more feet above or below the level of the sea. Any other spot in the same latitude on the level of the ocean will not give exactly that length searched for; it is not there every time. H. C. H

THE PLACER MINING COMPANY OF COLORADO.

Mr. L. S. Ballon, writing from Colorado Springs, says: I notice in your issue of December 15, 1877, an article by your staff correspondent. in regard to "The Swan and Blue Placer Claims," stating that "It is one of the properties of the Gold Placer Mining Company," an organization formed under the laws of the State of Connecticut, and operating in Summit, Park, Lake and Grand Counties, in Colorado—but you do not state the names of the incorporators of said Company.

Now, some three years ago, I purchased a half interest in this property, and ever since have been developing it, and have paid the greater part of the expenses for sinking the shafts, proving up the property, and putting in the open cut preparatory to fluming, also in diverting the Blue River from its channel, and have been paying the taxes as chief owner of the property; in fact, have just paid the taxes for 1877 and 1878, for which I hold the receipt. I have no knowledge of any company owning my property, nor have I been consulted in this transaction in any way whatever.

TO THE EDITOR—SIR: Would you or any of your able contributors inform me on the following questions, viz.: 1. Up to date, at a point in N. Lat. 39°, Long. 81° 30′, after the needle of the compass has settled, which side of the true meridian will (north end) it rest on and what angle will it make to the true meridian; and what will the variation be called, an east or west variation? Would you please illustrate the above by diagram showing the position of the magnetic, meridian and the true meridian?

2. At the said point above, in the year 1848, a line was run, and the bearing by needle was North 10° east; what will be the bearing of said line by needle in the year 1878, and what would be the bearing in both years by the true meridian?

3. At the said point above, in the year 1800, a line was run, and the bearing by needle was North 2° east; what will be the bearing by needle of said line in the year 1878, and in the year 1908, and what would be the bearing by the true meridian in the three different years mentioned? Will you please illustrate the above questions by diagrams, that they may be made plain to ONE SEEKING KNOWLEDGE.

Will some of our young engineers answer through these columns our correspondent's questions which, no doubt, are of interest to many of our readers.—ED. E. & M. J.

ON CUPELLING SILVER LEADS.

By H. C. Hahn, M. E.

In reference to the note on page 458, last volume of the JOURNAL, in regard to Mr. Steitz's mode of cupelling, I wish to communicate the method we used during the last few years in the Wyandotte Silver Smelting Works. After the English cupelling furnace of the Balbach pattern had run for thirty-six hours, the bath of bullion was run down, and so much bullion ladled out as could be done without injuring the bottom; the furnace was repaired on the sides and filled up with other bullion. The ladled-out bars, which assayed about 30·50 per cent. in silver according to the percentage of bullion, generally 2·5 per cent., were locked up. This operation was repeated every twenty-four hours, and after about one week's run all these rich bars were returned into the same furnace, the doors to the cupelling furnace-room locked, and the bullion run down to fineness. In this way I avoided any theft, and saved some silver, as the total amount was not exposed for a whole week to an intense heat. If several furnaces were operated, the bars of one furnace were weighed and assayed, the amount of silver credited to that furnace and these bars put with the rest in the second furnace, which was charged in the books with that same amount of silver. In this way we refined generally 600 to 800 lb. silver at once, to 900 to 995 fine, which were, by remelting in crucibles, brought to perfect fineness.

CLEARFIELD COAL REGION.

NEW YORK, Jan. 21, 1878.

TO THE EDITOR—SIR: I read with special interest your *Review of the Coal Trade of the United States for* 1877, as given in your valuable JOURNAL of the 5th inst., but particularly did the article regarding the *Clearfield Coal Trade* attract my attention.

I am very glad the superior qualities of the bituminous coal of the Clearfield District are being more and more appreciated in the market; however, it appears that shipments are yet too much confined to eastward outlets, and it is to be hoped that the trade by means of Lake Erie will also soon be brought into full play.

There are yet most valuable coal fields lying idle, both in Jefferson and Clearfield Counties, with some of the best veins above water level, simply from want of efficient railroad connections with the main eastern line and towards Erie and other points on Lake Erie.

Some very valuable coal tracts in both counties can now be bought at a very reasonable rate per acre, and it seems surprising that enterprising capitalists have overlooked and overlook such a chance for profitable investments, especially since the lately formed coal combination can but restore the entire trade, whether bituminous or anthracite to a thoroughly healthy condition, and the prospect being that the policy of the

large railroad corporations will favor the development of said region, the same as already the Pennsylvania Railroad Company is doing.

I am induced to make the foregoing remarks, because having been many years closely connected with coal mining I feel a deep interest in all matters touching mineral coal, and now hold some very valuable data regarding large tracts in Jefferson and Clearfield Counties, and would be most happy if, through the assistance of your valuable journal, I could succeed in contributing my mite to have public attention drawn in that direction.

Respectfully yours, G. C. LOUIS DEGENHARDT,
Consulting Mining Engineer, 73 Broadway, Room 113.

NORTH SHORE OF LAKE SUPERIOR.

Special Correspondence of the Engineering and Mining Journal.

Mining news has been very scarce for the last few weeks. The warm weather has enabled Col. Wilson, working on 2A, to get his shaft well timbered and covered in, so that now he is in good shape for the work of sinking, let the weather come as it may.

At the Duncan Mine the diamond drill has been steadily at work, and, although a large amount of the work done has been without result, on account of the drill not finding the vein, because of a great fault, as was afterwards proved.

The first bore that penetrated the vein on the line of the fault gave the best indications of ultimate success that have ever been found. Although no pay ore was struck by the drill, small amounts of rich mineral were detected in the cores, assaying from 100 to over 200 ounces per ton. Explorations are now going on to the west of the shaft to tap this rich zone at some distance from it. Large quantities of zincblende and some galena, and a marked improvement in the appearance of the gangue, in this direction have already been proved. An especially favorable sign is that, while for the last 300 feet in sinking the shaft no assays of blende would show more than two ounces per ton assays, from recent cores run up to fifteen ounces.

A force will soon be put on to sink the shaft to the level from which came the good assays, and it is expected that results obtained will decide the value of the North Shore veins in depth.

There is more talk about the gold discovery near Hay Lake, and there are those that hold it is not only a genuine discovery, but that the surveyors have gone up to locate the claims, and in a few weeks it will become a well-known fact.

As the parties, when here, showed no more specimens, and have been a long time deciding to have the claims surveyed, the discovery is still too much veiled in doubt to cause even a ripple of excitement.

"EZUEST."

AN UNSUSPECTED SOURCE OF ERROR IN MAGNETIC NEEDLE READINGS OF SURVEYING INSTRUMENTS.

While engaged in taking some delicate bearings with a surveyors' compass, the writer was puzzled by the magnetic needle not giving the bearing of the same object twice alike; this sudden vagary of the needle was the more unaccountable from the fact that the compass was an exceptionally good one with extra sensitive needle, and had heretofore always given very good results. An investigation was had as to the cause of the inaccuracies, and from the nature of them it was thought that "magnetic attraction," in the shape of iron in the metal of the instrument itself, might be the cause; but an examination with a "test-needle" proved this not to be the fact. The clothes of the observer were then carefully searched for anything that might have a tendency to draw the needle from its proper settling place; but no pen-knife, steel watch-chain, nickel plated sleeve buttons, etc., could be found. It was, however, noticed while reading the needle, that it never *quite* settled, but was in a constant tremor and vibration, and an examination of the magnifying glass used in reading the needle was made. The magnifier was similar to those now so universally used to read the verniers and needle-bearings of field instruments; having a black hard rubber or vulcanite frame, and this frame polished to a high gloss, and the whole cause of the trouble lay in this case or frame. It was found that this frame was peculiarly liable to become electrified, that the slightest friction, even the mere carrying in the pocket was sufficient to charge it, and that when thus electrified, if brought near the needle of a compass it had almost the effect of a loadstone in drawing it (sometimes as much as half a degree of arc) from its true settling place. On discarding this magnifier and using an ordinary glass lens without a frame, no further trouble was found in the field work done with the compass. As all the instrument makers of this country furnish these hard rubber frame magnifiers with their field instruments, the liability of these frames to become thus electrified should be made known. Any surveyor having one of this class of magnifier can convince himself of this fact in the following manner: Tear tissue paper or newspaper into small shreds; rub the frame of his magnifier briskly on the coat sleeve for a few moments; this friction will so charge the frame with electricity that if held above the paper, the paper will fly up and attach itself tightly to the frame; or if held near to the "test magnetic needle" (which all instrument makers use to prove their metals' freedom from iron) the needle will instantly be drawn to the frame and stick there as if it were made of iron. This electrical trouble was found to be at its greatest in clear cold weather, and when the rubber cases were new and highly polished, greasing the cases was found to somewhat diminish the evil, and touching with the damp finger also discharge l the electricity somewhat. Examination was also made of other magnifiers, those with brass, German silver and horn frames, such as are sold in optical stores, and on testing with the "test needle," the majority were found to be afflicted with "magnetic attraction," arising from impure metal in their cases, rivets, etc.

In consequence of these examinations one firm (Heller & Brightly of Philadelphia) have ceased furnishing these rubber magnifiers with their instruments, and have substituted other frames that will stand the test of the "test needle." In connection with this subject the following remarks, while not new, may not be out of place: "Be sure that nothing to artract the needle is carried by the surveyor in the shape of penknives, watch chains, buttons, or iron rivets in the magnifier used to read the graduations. Of late years new causes of error from this have risen. The new watches in which the movements are made of nickel are almost as powerful in attracting the needle as if these movements were made of iron. The felt hat makers' modern fashion of stiffening the rims of their hats by inserting around the edge a small iron wire, (the extra broad-brimmed, termed the 'military,' should especially be tabood) should make the surveyor examine both his hat and his watch."

There is, however, a general ignorance (especially among land surveyors) on this important subject, and one case that lately came under the writer's notice will be given in point: A land surveyor, not fancying the brassy look of his compass, had the entire instrument with its ball and socket, and sights, nickel plated, not knowing that as far as its effect on the needle was concerned he might as well have coated his instrument with iron. Alluminum has also been used instead of brass for instruments, but on account of the metal having "magnetic attraction" it is not suitable for needle instruments; this attraction is especially noticeable after the hammering process that is necessary to condense the alluminum after casting; this hammering "polarizing it," as it were. C. S. H.

PHILADELPHIA, January 24, 1878.

KROM'S DRY ORE CONCENTRATION AT AUSTIN, NEV.

By Alex. Trippel, E. M.

In your JOURNAL of July 28 last, I communicated some results of Krom's dry ore-dresser at the Manhattan Mill, in Austin, Nevada, during three months work in 1875, with the object of calling attention to the merits and peculiarities of that method of concentration. It will be remembered that I then alluded to the great severity of the test made, as having to treat ores which were not merely of inferior grade, but actually waste ores, and almost intractable by any known method of concentration.

I see now an article published in the Austin *Reveille*, of November 6, in which Mr. Krom describes the results of some further tests made by himself this last summer or fall at the Manhattan Concentrating Works, built by me a few years ago.

Since the subject is one of great importance for mining industry, you will pardon me for making a few remarks on Mr. Krom's results, and by giving his own figures for perusal. Mr. Krom, like myself, speaks of the unfitness of the ore which was furnished by the Manhattan Company, and from which results were expected which could hardly be obtained.

There are unquestionably limits in almost everything. The best furnace or mill or method of reduction, managed to perfection, will cease to give good results, when the ore goes below a certain value or otherwise changes its character in a way to prevent its successful treatment. It would be unfair to believe that the Manhattan mill was unsuccessful, because it cannot treat ores below $40 assay value; so it is equally unfair to believe the Manhattan concentrating-works unsuccesful, because not every sort of stuff, down to almost pure quartz and granite, can turn out 75 per cent. of its assay value in silver.

It should be considered that the absolute percentage of products alone is by no means the only factor by which the success and usefulness of concentration is measured; much depends on the *degree* of concentration. *Ten* tons reduced to one with a product of only 50 per cent. may be far more profitable to the miner than 80 per cent. brought out with a concentration of *three* tons into one.

Mr. Krom, in his article, refers to and compares his results with mine. In doing so he says that his ores were yet poorer than these I had to treat. In this he is mistaken, as the average assay value of his ores was over $34, while that of mine was $29 per ton.

Neither did Mr Krom concentrate to the same degree as I did. In percents I produced in concentrations 4·9 per cent.; in dust, 17 per cent. Mr. Krom produced in concentrations 7·99per cent.; in dust, 16·8 per cent. As to the final results they averaged with me of the assay value of ore, 56 per cent.; with Mr. Krom, 76 per cent., consequently materially higher. From the separate results of the *six* lots of ore treated, it will be seen from Mr. Krom's figures that they were much influenced by the *degree* of concentration, as well as by the better class of ore used in his sixth test. In addition Mr. Krom should have mentioned that before he started the works, some important changes in the machinery were made, which, at Georgetown, Col., had increased over 10 per cent. in the products. Instead of giving further explanation, I submit to your readers a synopsis of Mr. Krom's results, from which interesting comparisons can be easily made:

No. 1.	Assay of ore gave	$29 84	
	Produced in weight concencentrations	4·78	p. c.
	Produced in dust	13·07	
	Produced in value	65·25	
No 2.	Assay of ore gave	$20 21	
	Produced in concentrations	8·36	
	Produced in dust	15·7	
	Produced in value	79·7	
No. 3.	Assay of ore gave	$25 12	
	Produced in concentrations	11·4	
	Produced in dust	17·7	
	Produced in value	85·3	
No. 4.	Assay of ore gave	$26 45	
	Produced in concentrations	8·66	p. c.
	Produced in dust	18·25	
	Produced in value	67½	
No. 5.	Assay of ore gave	$25 12	
	Produced in concentrations	8·35	
	Produced in dust	20	
No. 6.	Assay of ore gave	$82 20	
	Produced in concentrations	7	14.00
	Produced in dust	20½	
	Produced in value	92½	

On the whole Mr. Krom treated 418 tons of ore, and produced $33\frac{854}{2000}$ tons of concentrations, and $70\frac{856}{2000}$ tons of dust, the first averaging in assay value $196.60, and the latter $63.40 per ton.

The dust was therefore 84 per cent. higher in value than the treated raw ore.

These results, as far as they are published, and without taking into consideration the average daily quantity of ore treated, must be taken as highly satisfactory. Compared with mine, they confirm my remarks made heretofore, that the actual loss in tailings is not in proportion to the value of the ore, but that ores of $80 value give far better results than those of $20 value. I would not say that this rule stands equally good in all mining districts, but it is decidedly so for the ores found in Austin.

There are some mechanical details in Mr. Krom's concentrators, which, in my opinion, admit of substantial improvement, especially in the shape of the tubes, on which the ore rests, and through which the air is conducted to the same. At present the upper face of these tubes is flat, and the rich particles of ore have a chance to move forwards and over the edge with the tailings, whereas, if they were ∧ shaped, the heavier particles could not remain on the surface, but would fall on either side.

NAME OF COMPANY.	Capital Stock.....	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Rate of Dividend Paid during year.	Total Amount Paid in Dividends during the year. .....
		Highest. ..	Lowest	Highest...	Lowest ...	Highest. ..	Lowest	Highest. ..	Lowest ...	Highest...	Lowest ...	Highest ...	Lowest ...	Highest. ..	Lowest ...	Highest ...	Lowest	Highest ...	Lowest ...	Highest ...	Lowest ...	Highest ...	Lowest. ..	Highest...	Lowest ...	P.c.	
Manhattan, N. Y.....	$4,000,000	242	234	234	224	222	220	223	200	210	200	198	190	200	192	210	202	206	200	203	199	213	202	215	208	20	$800,000
Mutual, N. Y.	5,000,000	101	95	103	100	103½	100	100	90	95	90	94	90	96	92	96	93	96½	94	95	92	95	92½	94	91	10	500,000
Metropolitan, N. Y.....	2,500,000	150	145	145	140	146	142	141	135	138	132½	136	130	138	134	135	132	132½	127	131	128	132½	130	133½	131	10	250,000
New York, N. Y.....	4,000,000	138	130	135	130	132½	130	136	128	135	130	133	130	129	125	128	125	128	125	137½	127	126	122	122	120	10	400,000
Municipal, N. Y....	1,500,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	80	74	100	80	00	.....
Harlem, N. Y.....	1,850,000	108	102	110	106	109½	106	103	98	105	100	100	98	102	99	100	98	103	98	101	98	100	98	99	96	07	129,500
Brooklyn, Brooklyn.....	2,000,000	180	175	175	170	176	170	178	170	175	170	165	155	160	155	160	155	170	158	170	167	170	70	167½	158	15	300,000
People's, Brooklyn.....	1,000,000	55	44	52	55	51	45	50	40	50	40	41	39	41	35	42	35	39	35	40	35	40	30	30	30	06	.....
Citizens', Brooklyn.....	1,200,000	100	94	102	96	100	93	98	90	95	87	85	75	78	76	81	75	75	69	79½	69	85	80	85	80	04	48,000
Nassau, Brooklyn.....	1,000,000	87½	80	86	80	85	80	85	78	82½	80	80	75	78	76	80	76	78	76	80	76	80	78	85	80	04	40,000
Metropolitan, Brooklyn.....	1,000,000	80	76	80	77	80	76	78	75	75	70	75	70	71	68	69	66	71	65	70	66	69	68	70	68	05	50,000
Williamsburg, Brooklyn	1,000,000	145	130	138	130	136½	133	136	130	130	121	127	121	121	118	121	117	122	118	121	120	123	18½	124	121	10	100,000

THE QUOTATIONS OF GAS STOCKS FOR 1877.

We give above a table showing the course of gas stocks during the past year. These quotations are based upon actual sales, and therefore represent the market value of the stocks quoted. With but few exceptions, the list shows a gradual decline, and closes the 31st of December at almost the lowest point attained during the year. The stock of the Manhattan Gas Co. opened in January at $242 per share. The lowest point reached was in October, when it touched $199, but has since recovered, the final quotation being $208. The stock of the Mutual Gas Co. has been the steadiest on our list, the extreme prices showing but a difference of $11 per share. The final price, however, is about the lowest of the year.

The Metropolitan, of New York, opened at $150, and represents almost a steady decline during the year, closing at $131 per share; in September this stock touched $127.

The stock of the New York Gas Co. closes at $120, per share, the lowest point in the year, the opening quotation was $138, from which a gradual decline has occurred to the present figures. Our quotations of the stock of the Municipal Gas Co. (Tessie du Motay Process, Water Gas) commenced during the month of July. We have no record of transactions previous to November, and therefore omit quotations. The extreme fluctuations in the stock of the Brooklyn Gas Co. have been $180, at the opening of the year, against $155 in June, the final price shows a slight recovery on this quotation. The stock of the People's Gas Co. of Brooklyn closes at $30 per share, a decline of nearly 50 per cent. from the opening price of the year. The stocks of the Citizens', Nassau, Metropolitan and Williamsburg, of Brooklyn all show declines ranging from 15 to 30 per cent. The dividends declared by ten of the companies enumerated below (the Municipal of New York, and the People's, of Brooklyn, not declaring any) have ranged from .04 per cent to 20 per cent. on the capital stock of the companies. The total sum paid to the stockholders of these companies aggregate $2,617,500.

THE POUGHKEEPSIE BRIDGE.

A Bridge with the Longest Truss Spans in the World.

Work on the proposed great bridge across the Hudson river at Poughkeepsie is being prosecuted by the American Bridge Company of Chicago, under a contract with the Poughkeepsie Bridge Company to build the structure for a lump sum, the amount of which they decline to make public. Estimates of the cost of the work vary from $4,000,000 to $5,500,000. The original charter authorizing the construction of the bridge was granted May 10, 1871, and was for a "suspension bridge to be used for the passage of railroad trains, vehicles, cattle, etc. This charter required the work to be begun before July 1, 1872, and the bridge to be completed and open for use before Jan. 1, 1876. In 1872 the charter was amended, permitting the erection of shore piers on the dock line at each side of the river, and four piers in the river channel, at a distance apart of not less than five hundred feet, the piers to be kept lighted at night during the season of navigation, and a tug to be kept ready by the bridge company to assist tows in their passage. The time for beginning work was extended to Jan. 1, 1874, and for its completion till Jan. 1, 1879. The corner-stone for one pier on the east side was laid in December, 1873.

The capital stock was fixed at $2,000,000, with the right to increase it to $5,000,000, and with authority to borrow money to an amount not exceeding the capital. The act of incorporation requires the company to construct a bridge that shall serve for highway as well as for railway travel. Nothing in the supplementary legislation relieves them from this obligation, yet the company have contracted for a double-track railway bridge only. The bridge is to consist of five spans, each 525 feet long, made entirely of wrought iron, and built on the rectangular truss plan. It will be of the kind known as a "deck bridge," which means that the trains run over its top instead of between the sides as is usual. The bottom chord will be 135 feet above the water, and the side truss will be 65 feet high, making the railroad track 200 feet above the water. The longest truss bridge span heretofore built is 515 feet in length. The approaches are to be of iron spans and trestles with a total length of 2,024 feet, and 40 to 90 feet high. That on the Eastern side will run over a thickly-built portion of the town.

The end or shore piers will be built about thirty feet back from the river edge. There are to be four piers in the river channel. At pier No. 1, on the west side of the river, the masonry is now built to a height of eighteen feet above the surface of the water. This pier was constructed in the following manner: First, a wooden caisson was built on the shore on ways specially prepared for it, very much like the ways on which ships are built. The caisson is fifty feet wide, one hundred feet long and eighty feet high. It is made of yellow pine and hemlock sticks twelve inches square, three of which are laid side by side to form the outside walls; then crosswise and lengthwise, every ten or twelve feet apart, run petitions built in the same manner. These cut the caisson up into forty compartments. The bottom edge of the ends and sides of the caisson are built of solid timber, running from a cutting edge at the bottom to a thickness of twelve feet at a height of sixteen feet above the bottom, the outsides being perpendicular and the inside wedge-shaped. Lengthwise through the centre runs a wedge-shaped section of solid timber resting upon a sharp edge, and which is sixteen feet high and fourteen feet broad at its top. All of the bottom edges are shod with iron, and the timbers are framed and bolted together very securely; under each cross partition is a heavy iron draw bolt.

The cross partitions commence about six feet above the sides. Of the forty compartments formed in the caisson twelve only run through it from top to bottom; these are the chambers through which the mud is dredged from under the caisson. The remaining twenty-eight chambers run down to the top of the wedge-shaped outside and centre sections of solid timber, and are pockets into which the concrete needed to sink the caisson into the mud is put. The twelve dredging chambers are twelve feet square throughout their whole length, except at the bottom, where they flare out by reason of the wedge-shaped sides and centre piece. Viewed from the bottom they look like the chimneys seen in old Dutch farm houses, or like enormous inverted grist mill hoppers.

This unwieldy mass, drawing nearly sixty feet of water, was towed into place in May, 1877, and concrete, composed of five parts of sand, stone and gravel to one part cement, was mixed on the deck of a scow moored beside it and lowered into the pockets or timber-bottomed compartments by means of a clam-shaped dredger. This process continued as long as the caisson continued to sink through the mud, which at this point is forty feet deep. When the caisson stopped sinking the dredger was used to remove the mud from under it through the twelve dredging chambers, the wedge-shaped outsides thrusting the mud inward toward the centre of the dredging chambers, while the centre wedge thrust it outward in the same manner.

At each lift of the dredge five cubic yards of mud and clay were removed. This method was pursued until the caisson reached hard bottom. The clay and mud was at times so hard that the dredges cut several feet below the bottom edges of the caisson before it was forced down by the weight of the concrete in the pockets. Sometimes the mud was softer at one point than another, and the caisson sank unevenly. On the top of the caisson was built a coffer dam twenty feet high. The dredging chambers were then filled up with concrete in the same manner as were the pockets. This made twelve columns of concrete, each twelve feet square and eighty feet high, which rest upon a bed of concrete fifty by one hundred feet, which, in its turn, rests upon the hard bottom of the river. There are also twenty-eight other columns of concrete that rest on the wedge-shaped timber bottom of the cassion. All these masses of concrete are bound together with cross walls of timber every ten or twelve feet each way. The water was then pumped out of the coffer dam and the masonry started at a depth of twenty feet below high water.

The masonry for the pier is seventy-four feet long by twenty-eight feet wide at base, and when completed will be thirty-six feet long by twelve feet wide at top, and one hundred and fifty-five feet high.

At the present time there are seventy men constantly employed at the work on this pier. Five steam engines are also in continuous use. All masonry above water is of cut granite. The Portland cement used in the work was manufactured by Mr. W. G. Coolidge, the engineer under whose plans and supervision the work is carried on.

The elevations at Pier No. 1, from the bed of the river to the railroad track, are as follows: Concrete, 80 feet; masonry, 155 feet, and bridge, 65 feet—making a total height of track above the river bed of 300 feet. At the other piers the distances will be somewhat greater. The depth of water at this point is 60 feet, and the width of river 2,500 feet. The bluff on the western shore is 135 feet high, and that on the eastern shore is 110 feet above the surface of the water.

The caisson for Pier No. 1 had been submerged into place by June 20. That for Pier No. 2 is already down 95 feet. The caisson for Pier No. 3 is partly completed, and stands upon the ways. No masonry has been built, except at Pier No. 1. Under the present charter the whole work must be completed in one year from this date.—*N. Y. Sun.*

LIABILITY OF MINE OWNERS FOR INJURIES TO EMPLOYES.—John Carroll, in the right of the widow and children of William Carroll, who was killed by an explosion of fire-damp at the Pine Ridge colliery in 1873, instituted a suit to recover damages for the death of the latter against the Delaware & Hudson Canal Company, and the case was tried and a verdict obtained last week for $4,000. C. Pike and J. Lynch appeared for the plaintiff, and S. Woodward and A. T. McClintock for the company This, we believe, is the first case which has occurred in Pennsylvania of a company being held responsible for the accidental death of its employes. Though the case will probably be appealed to a higher court, its importance to the mining interests and miners generally merits special notice and it will attract attention.

FORGING AND TEMPERING IRON AND STEEL.—The forging and tempering of iron or steel can be greatly enhanced, according to Herr Edward Blass, of Cleve, Prussia, by dipping the metal, in whatever form, in fused salt. This dipping in salt is also well adapted for annealing steel without the oxidation of the surface. If the metal be rusted, it must be allowed to remain some time in the bath. Borax can, with good effect, be mixed with the salt. Metal "purified" by such an immersion is very susceptible to galvanic depositions, and can easily be coated with copper, zinc, tin, nickel, silver, etc. For iron in the spongy or powdered state, as obtained from the reduction of the ores, the salt bath is especially adapted, for it augments the combination of the particles by making the surfaces free from impurities. To prepare the bath for an application as here proposed, the salt must be fused in a puddling furnace, and the iron sponge, with the addition of a flux, be added in small quantities so as not to vitrefy the salt. The iron is left in the furnace till the flux has combined with all the impurities and formed a slag, whereupon the iron is taken out and forged together. While the iron is in the furnace it should be constantly covered with the salt, so that oxidation be prevented. For the hardening of iron the salt is fused in a convenient vessel and the object immersed and from time to time a small quantity of ferrocyanide of potassa added, 1 or 2 lbs. per 100 lbs. of iron. The articles, according to their thickness, are permitted to remain from 5 to 30 minutes in this bath, and are then plunged in water containing, in 100 parts, 1 part of hydrochloric acid, 5 of wine vinegar, and one of salt. If the objects are to have a silver lustre, they should be immersed for a few minutes in a mixture of three parts wine vinegar and one of hydrochloric acid.

MINING NEWS.

Staff Correspondence of the Engineering and Mining Journal.

ARIZONA.

The Guanajuato Mine in the Perial Mountains is the newest sensation. The ledge crops out and is traceable, with but few exceptions, for a distance of several mines. A short tunnel has been driven into the ledge and three prospecting shafts sunk, in all of which good ore is found. The owners have sent four tons to San Francisco, which they report will run over $1,000 per ton. The location is less than two miles from the Silver King.

The McMillan Mine, and its extensions, the Hannibal and Lee claims, are being developed rapidly. The former has now nearly $100,000 worth of ore ready for shipment, and $50,000 in milling ore on hand, awaiting the erection of works. The extensions of this vein are not yet in permanent pay. McMillan hill is likely to become one of the most noted mineral localities in the West.

From thirty to forty certificates of mining locations are being made weekly in the office of the Recorder of Perial County. This will give an idea of the vigorous prospecting going on in Arizona. The *bona fide* transfers of mining property during the same time numbered 16 in this county, for which the considerations amounted to $45,800.

A recent shipment of Silver King concentrates amounted to 6,000 pounds, and one still later to 40,000 pounds, which last contains, according to sample, $60,000.

A consolidation of numerous small interests has been effected in Castle Dover District, and a strong company with a capital of $10,000,000 has been formed to erect smelting works. The ores are mainly argentiferous lead minerals, and are very abundant.

COLORADO.

San Juan.—The Ocean Wave Reduction Works fired up October 12, and produced 120 tons of base bullion worth $25,000 during the balance of the year.

The Crooke Works during the year shipped 300 tons, worth $48,000. The output of the Van Girson Leaching Works for the season in silver bars has been $35,000.

La Plata Miner.—The Poughkeepsie lode, in Poughkeepsie Gulch, is being worked this winter under lease by Messrs. Dow & Walers, and is reported to be in unusually good condition.

Some very rich ore is coming out of the Osceola lode, rich in both gold and silver.

The Bonanza Tunnel, which is being driven under Musical Point, and which is perhaps the most important tunnelling enterprise in Southwestern Colorado, is now 125 feet in length and advancing at the rate of two feet per day. The Boston mine, owned by the proprietors of the Bonanza Tunnel, has a large amount (estimated as high as 1,000 tons) of ore on the dumps, which will go to reduction works in the spring. There are a number of other mines on this hill which give unusual promise of value.

The production of ore and bullion from the silver district of which Georgetown is the centre amounted during 1877 to a little over $2,000,000, as follows, in round numbers:

Bullion (mainly silver)	$357,000
Ore shipped out of the State (4,000 tons)	800,000
" " to reduction works outside of the Georgetown district	980,000
Gulch gold	50,000
Total	$2,187,000

Excluding the last item this value has been taken from 16,000 tons of dressed ore.. The average grade therefor was about $133.50. The total amount of crude ore mined was, however, about 1,500 tons in excess of this figure, so that the actual grade of all mineral sold and reduced was about $122.00. When it is stated that about one-sixth of the tonnage of the lump was ore of so low a grade that concentration was necessary before it could be either amalgamated, the grade of the balance will appear to be unusually high. Georgetown has always had the reputation of being a district of rich ores, and the record of the past year shows that this distinction was well maintained.

The proportion of metals was as follows:

Silver	1,956,000	89·4	per cent.	Gold	100,000	4·5	per cent.
Lead	128,000	5.8	"	Copper	3,000	.14	"

The great circumstance of the year in the Georgetown district has been, of course, the discovery of the mines on Red Elephant Mountain. These new properties have produced 1,600 tons of ore worth $250,000, corresponding to an average grade of $156 per ton. The two principal mines are at present in a very fine condition, and during 1878 the camp will probably yield double the quantity taken out so far.

The yield of lead was larger than during any previous year in the history of the district. It was all derived from argentiferous galenas. The copper yield continues merely nominal.

Two milling establishments are at work in the country and four concentrating plants. Besides these there are two gold mills and six crushing and sampling mills. Another concentrator, and probably two, will go into operation early in the spring.

All of the principal mines have maintained their past reputation excepting the Pelican and Dives, which have done but little during the year, owing to the long fight between them, which has exhausted both. The proposed consolidation reported in our last issue and which would have settled the whole question to the satisfaction of both, has since then been interrupted by a creditor of one of the mines, but our latest information is to the effect that this difficulty is overcome, and that the consolidation will be finally adjusted within a few weeks. The combined mines will form a magnificent property, which a comparatively small amount of money spent in repairing and refitting will place in splendid condition.

What is familiarly known as the Chaffer & Hamill mines, including the English Tenille and almost the whole lower end of Brown gulch, went into operation last spring, after long years of litigation. About $150,000 represents the yield of the season.

These mines are being worked on a large, generous and systematic plan, and will double their yield in 1878.

The Boulder West has been the most prolific mine of the year. During the last four months of the year, over 1,000 tons have been taken out, which were worth $117,000. Almost no stoping has been done. The Free America, another claim on the same vein, has yielded $100,000.

The Tilden on Leavenworth has sold ore to the value of $80,000, nearly all of which brought over $1,000 per ton. This lode is partly owned by the Marshall Tunnel Company, who have developed rich ore in Nos. 5 and 10 in their tunnel. The Colorado Central, belonging to the same property, has also done well during the year. Leavenworth Mt., has on the whole sustained its reputation for high grade mineral and is rightly regarded as one of the best mountains in the district.

The Pay Rock group of mines, including the Hopewell, Champion Silver Plume, and others, has been a rich producer of ore; the Pay Rock being the most developed and most productive. This group of lodes lie directly in the path of the Diamond Tunnel. The Baxter, lower down the hill, has developed during the year into one of the first mines of the camp.

The shipments from the Boyd Smelting Works, Boulder, for 1877, amounted to over $100,000 in gold, silver, and lead. Mr. Boyd, the owner and manager, is a man who, in his business transactions with the miners, has generally given great satisfaction, and in consequence, his works, commenced on a small scale, have now become a permanent institution in the section of country of which Boulder Canon is the outlet.

The Caribou Mine, once noted for being perhaps the greatest mining swindle on the Continent, having passed from the hands of its foreign owners into those of practical and able American mining operators, is now in magnificent condition and yielding better than during any time in its previous condition. The shaft is now nearly 700 feet deep. Caribou district is improving otherwise with rapidity and vigor.

The Sherman, No-Name and Monitor are the other prominent mines of the camp, each of which is doing well. Time and perseverance, in spite of the fearful blow dealt by the failure of the Holland Company, have already demonstrated that Caribou Hill is one of the finest mineral sections in Colorado.

It is thought by those who ought to know, that the difficulties into which the Haines Peak Mining Company (Placer) was drawn by the extravagance of its first superintendents and managers, will be overcome early enough this year to permit a good washing season. During a short and very unfavorable term last year, $12,000 in dust was taken out, and it is known beyond peradventure that the ground is rich and profitable.

The Moose Company has gotten its second cylinder into place and will commence to produce bullion again in a short time. For several months past this company has been engaged in repairing its mill, and consequently an immense quantity of milling ore has accumulated. The mine is reported to be in excellent condition. Several new and fine stopes have been opened, and since our last report, several of the old ones have opened into wide pay.

It is probable that in early Spring operations will begin on Arrapahoe Bar below Golden. The company owning this ground is a good one, and the ground is rich. The difficulty lies in overcoming the trouble of a lack of grade. This point has, however, been carefully considered and prepared for.

It is now almost certain that the main portion of the Boston & Colorado Smelting Works will be moved to Denver early in the Spring. The company talk of building a railroad of its own from the Capital to the most important mining districts, but this project is regarded generally as a bluff for the C. C. R. R., which is not disposed to grant to the Black Hawk Works any more favorable freight terms than is given to other reduction establishments in the State.

Negotiations are pending for some very extensive consolidations in the placer regions of the Blue and Arkansas valleys in the coming Spring. So successful were many of the operations in these canons during 1878 that a great amount of attention has been drawn to the localities.

We understand the Pelican and Divies mines are to be consolidated, and will be worked under one management. This will form one of the finest properties in the State.

DAKOTA.

THE BLACK HILLS.—A telegram, dated Deadwood Territory, Jan. 23, says: "The first clean-up was yesterday made from a three days' run on ore from the Reno Mine, situated near Gayville, which yielded 250 ounces of gold, valued by bankers here at a fraction over $4,500. Ninety-three tons of ore were crushed and averaged $50 per ton. This morning's *Pioneer* contains the following: 'Maj. D.H.Conkling has just returned from his second trip to the newly-discovered oil region near Jenney's stockade. He reports that people from every section of the hills are arriving to secure claims. There are at present 52 claims located, a cabin having been built on each. Messrs. Bascom and Randall, who had much experience in other oil regions, have taken up claims three miles distant from the oil springs. They pronounce the indications for oil the best they have ever witnessed. About ten miles north of the oil springs six salt springs have been discovered, from one gallon of the water of which one pound of pure salt was extracted. Several parties are making preparations to put up pans for the purpose of salt extraction.'"

MONTANA.

Ninety-six tons of ore from the Willow Creek Mine, at Pony, produced 343 ounces of retort. This corresponds to a yield of over $60 per ton in gold.

The Hecla Consolidated Company have completed its cupel furnace, and will now refine its own lead. This institution is in a most flourishing condition.

A salt famine is threatened in Montana, which is likely to compel several of the mills to shut down before transportation opens in the spring.

The shaft on the Algonquin mine, Phillipsburg, is now 180 feet deep, and 400 feet of levels have been driven, which show an ore body of very gratifying size. The company thinks of putting up a 20-stamp mill in the spring. The mine is justly regarded as among the best in Montana.

Mr. L. C. Trent, Northwestern Agent of the Frue Concentrating Machine, has visited Montana, and will make his headquarters at Butte. The introduction of the banners in Montana is likely to be an event of some importance in that Territory. Mr. Trent is a gentleman who understands his business and also his concentrator.

NEVADA.

The Manhattan Company (Austin) shipments for January 5 were 8 bars of silver, worth $7,673.

The prospects of Belmont, which has been under a partial cloud for some time, are improving. The three largest mines are developing new ore of value, and the prospects are bright for a satisfactory year in the camp.

The Martin White Company, at Ward, shipped bullion to the value of over $50,000 during December.

The bullion shipments of Lincoln Company—in which is Pioche—for the year past, amounted to about $600,000.

The *Pioche Record* gives the following concerning the three big mines of that district:

BAY.—The south drift continues in very rich ore; the discovery cut continues to improve, both as regards quantity and quality. From indications in the south drift, as well as in the discovery cut, both the ore bodies seem about to unite, confirming the experts' theory of the formation. Still continuing to ship ore, notwithstanding the storm. Everything is going on well at the mine. The work of crushing at the mill has not yet been commenced.

HILLSIDE.—From Eugene Blair, Superintendent of this mine, we learn that they have run down on the ledge a distance of about 35 feet, and have cut through the ledge in several places, in which it is three feet in width. The ore assays well, and the ledge is looking nicely. At present are only able to run day shifts, but as soon as more work is done, will place on an additional force, and prosecute the work with vigor.

ALPS.—Considerable ore of good quality is being extracted; and as work progresses there is considerable improvement in size of vein and quality of ore.

The Eberhardt & Aurora mine is producing about five tons daily. The Treasure Hill tunnel is being driven ahead night and day, and is in good driving ground. The Superintendent is prospecting the ledge or ore body recently cut, but with no results of note as yet.

Cherry Creek district has experienced a notable revival of late, owing to the opening of the Star & Geneva mills, which will have ore enough to run them during the winter.

The Steamboat Quicksilver Company have made their first sales of metal, and will hereafter produce regularly. The State has, therefore, another successful industry.

According to a writer in the *Stock Report*, 1,000 tons of ore, of an average value of $100 per ton, are daily crushed and amalgamated in the seven mills in Six and Seven Mile Canons, near the Carson River. The saving effected is 70 per cent. The loss is divided as follows: Slimes, 15 per cent.; tailings, 17 to 18 per cent. The latter also carry away about 1,700 lbs. of mercury every 24 hours. Four mills, aggregating 375 stamps, work up these slimes and tailings, and are producing about $1,500 daily, at a cost of about $2,000. These tailing mills, which should belong to the companies owning the principal works, or whose operations should buy the $30,000 worth of ore daily allowed to pass out of the reach of stockholders, are owned and run by friends of the speculators, or rather by the speculators (the Bonanza firm) themselves. Their profits, which amount to four or five millions annually, are therefore stolen from the outside stockholders of the Comstock mines.

The last shipment (10 tons) from the Silver Monarch mine, near Reno, milled $500 per ton.

NEW MEXICO.

The settlement of the boundaries of the Maxwell Land Grant and the liberal offers made to miners and prospectors for the development of its resources is likely to result in a rapid increase of the bullion product of Northern New Mexico. This grant contains within its borders numerous quartz and placer claims of undoubted value, which have not been worked extensively heretofore, because of the legal difficulties which beset the titles to the entire tract. The district is now, however, full of prospectors, and already a number of promising properties have been located or leased. The more recent new enterprise is the re-opening af the Lee and Grouse lodes, both of which promise to pay well. An arastra is to be put up to test the rock, and, if success is gained, more extensive and better milling facilities will be secured. The ore from these mines is a fine gold quartz.

SOUTHWEST MISSOURI.—Our special correspondent in this district sends us the following notes, under date January 19:

The railroad now being built from Springfield to the Dade County Zinc and Lead Mines, will open the field for important mining enterprises. The enormous zinc beds, of both carbonate and silicate, discovered there a few years ago and still yielding large quantities could not be mined with profit on account of great expenses of hauling to the railroad.

The two new bag rooms of the Lone Elm White Lead Works, of Joplin, are nearing completion.

The biggest lead prospect known in Joplin was struck recently in West Joplin, on a lot belonging to E. R. Moffet. It is 120 feet below the surface.

Diggings which are not drained by the large pumps of our companies are more or less idle, full of water.

The Zinc Dressing works at Webb City are a success. They are under the supervision of Mr. F. de Itwolinsky, builder of divers works in the Southeast Missouri mines.

The production of lead ore in Southwest Missouri for January will be one-third below the late monthly average.

The lead dressing works of the late Granby Mining and Smelting Company, at Lone Elm, Joplin, prepared the ore for the furnaces so thoroughly that the percentage of metal obtained is several per cent. larger than the loss caused by the separation of zinc, flint, and the washing of the lead ore.

The rate of freight from Zoplin to St. Louis for Zincare is $60 per car of 10 gross tons.

The roads are in such a terrible condition that shipments are largely affected thereby.

The zinc buyers in Joplin have received orders to pay ten per cent. less per ton on late quotations. As there is but little mined at present, and still less brought to market, they will hardly succeed in effecting the reduction unless they cease buying for some time.

Good mines will probably be opened this year at the Sherwood and Bellville Diggings, a run of mineral connecting with the old Stevens mines.

The Oronago-Joplin Railroad, the opening railroad connection between Joplin and St. Louis, by way of the Missouri & Western and St. Louis & San Francisco, is now completed.

The New York Mining Company, operating on one half of the old Picher Forty Acre Tract at the mouth of Joplin Creek, is busy effecting thorough drainage of their old diggings. The Superintendent, Mr. Stamp, feels sure of the success of his operations.

The first three bee-hive coke ovens on the Joplin Railroad were fired at Carbon on the 18th inst.

OUR SOUTHERN MINES.—From the Dahlonega *Signal* of recent date we take the following notes showing the condition of the Gold Mines in that vicinity:

The Findley is steadily pounding away on her immense mountain of ore, and main-

taining her unquestioned reputation of being perhaps the richest gold property now being worked in Georgia. For the past week four of her six batteries have been running on a fine grade of sand ore from the top of the ridge, with a most gratifying yield. The hill or mountain on which this mine is situated rises abruptly to the height of five hundred feet above the Yahoola Creek, which flows at its base. Large veins of a low grade ore run through the entire length of this hill, on a course North, 20 degrees East, with an easterly dip of about 30 degrees. So cheaply can this mine be worked and so vast is the amount of ore, that it is estimated that thirty cents per ton will cover the entire cost of mining and milling.

Within the past few months Mr. Price has opened up an immense sand vein, lying back or West of the veins of low grade ores, on which the mill was formerly kept at work. This sand vein, as it is called, seems to be found in vast "chambers" of ore, and yields upwards of twenty dollars per ton. At present this vein is not being very extensively worked, on account of there being a very poor supply of water available to run it to the mill. A smaller but much richer vein, situated still back or West of the sand vein has been worked to considerable depth, and a great quantity of the precious metal extracted. This vein, by being broken or detached, has often been lost, but always rewards the patient miner for his efforts whenever it is found. Ore yielding over one hundred dollars to the panful has been taken from it; in fact, excepting the Battle Branch mine, no mine in the country yields such rich ore as the Findley.

A fresh gang of men recently commenced work on the extension of the Hand Company's canal to Pigeon Roost, and that important work will soon be pushed through to completion.

The new 10-stamp mill at Cavender's Creek is completed, and we hear it is one of the best ever built in Georgia.

The "Fairmount Mill," (Messrs Neals & Imboden) near town, is rapidly nearing completion, and will be a duplicate almost of the Flandin Mill.

A correspondent in the *Atlanta Independent* says of the Battle Branch Mine: "There is but little doubt that this mine has yielded more of the precious metal than any other in Georgia, and yet to-day it stands idle, waiting for some enterprising men to take hold and force from it its hidden treasures, for, practically, it has not been opened yet, as about 60 feet is the greatest depth to which it has been worked, when they were stopped by water. Major Hockenhull, a former owner of this mine, told me that he has taken 9,000 dwts. of gold out of less than ten feet of the vein, or about three tons of the ore, and that in assorting the ore from one of these "pockets," you could get a bushel that would go as high as $20,000 per ton. I understand that the present owners, who are New York men, are making preparations to renew work. There is a fine 8-stamp mill on the property, which is run by water power, of which they have an abundance, obtained from the Hightower river, which runs through the property."

The Walls Lot mine is situated about half a mile west of the Findley. This mine has been recently purchased, and is now being opened up by Messrs. Imboden & Neal. Here is seen an ore similar to that of the Findley mine; but instead of occurring in veins, it seems to have been thrown up in bunches or "shutes," some of them of considerable size, but having no regularly defined course—the angle of the dip varying from 45 degrees to 30 degrees. Several tunnels and levels have been cut in this mine, and several hundred tons of good pay ore delivered at the different dumps. A fine ten-stamp mill of the Porter & Meakim pattern is being built, and will be run by steam power.

The Hamilton mine is situated on the Yahoola River, about half a mile above the Findley, and comprises about 160 acres of land, through which runs a number of gold-bearing veins of different thicknesses. At present there is no work being done on this mine. There is a very good mill-house on the property, and water power sufficient to run about thirty stamps.

NOTES.

IOWA COAL DISCOVERY.—A correspondent writing to the *Inter-Ocean* from Cherokee, Iowa, under date of the 15th inst, says: "A vein of coal, two and a half feet thick, has just been struck, six miles northeast of town, 130 feet below the surface. Our coal now comes from Fort Dodge, and geologists did not intend to allow us anything of the kind. Nature is more generous than the scientists. This discovery is very important to all Northwestern Iowa."

PNEUMATIC CLOCKS.—A company has been formed in Paris for working the system of pneumatic clocks—time-measurers by air-pressure—adopted successfully in Vienna. The compressed air is fed into a reservoir, which gives off a uniform pressure of half an atmosphere, the compressed air received by each clock being released by a pellet and pendulum in the usual way. A large number of clocks can be grouped in connection with a single reservoir, and the time can be laid on to houses by piping, just as are gas and water.

THE SALT-PRODUCING TERRITORY OF MICHIGAN is divided into ten inspection districts, having a total manufacturing capacity of over 2,000,000 barrels, or 10,000,000 bushels of salt. In the Saginaw district six steam blocks have been erected since the last report, and six kettle blocks abandoned. The entire amount of salt inspected in the State is: Fine, 1,590,841 barrels; packers, 20,858; solar, 32,949; second quality, 26,249; total, 1,660,897. This would amount to 8,304,485 bushels, being an increase of 880,840 bushels, or 198,198 barrels over last years' product. The revenue of the State inspection office during the year was $10,089.20, and the expenditures $10,053.97, leaving a surplus of $35.23.

INDIA-RUBBER PISTON-PACKING.—In the "Grands-Makets" Belgian coal mine there is a cistern with a direct-acting pump which raises the water to a height of 220 metres. The pump body was lined with metal, and the piston was packed with steel rings. The effective work sank in a few months from 80 to 25 per cent. An examination showed that the steel rings, on account of the impurities of the water, had torn the lining and broken much of the packing. It was therefore decided to use a softer packing, and copper was tried with similar results. Rings of moderately hard caoutchouc, alternating with copper disks, were then substituted, netting 85 per cent., and avoiding the wear of lining, and consequent diminution of efficiency.—*Dingler's Journal* (*Franklin Inst. Journal.*)

THE DECEMBER WAGES BASIS.—The following collieries drawn to furnish prices of coal sold in December, to fix rate of wages to be paid in December, made the following returns:

Merriam (P. & R. C. & I. Co.)	$1 56	Thomaston (P. & R. C. & I. Co.)	$1 53
Girard, "	1 55	Locust Spring, "	1 53
Boston Run "	1 60		

The average of these prices is $1.55 4-10, and the rate of wages, according to this price, would be 32 per cent. below the $2.50 basis, but, as was announced yesterday, Mr. Gowen decided in accordauce with his new plan of basing the price on the toll and freights, to deduct but 25 per cent.

THE LAMENTABLE CONDITION OF THE ENGLISH COAL TRADE.—The distress in South Wales is frightfully severe. There is a collapse of the coal trade, which has fallen off at Cardiff alone by 100,000 tons a month, and the resulting poverty is deplorable, both as a fact and as evidence of the improvidence of the population. In some places people are feeding on potato peelings, raw cabbage-leaves, and brewers' grains. At Merthyr there are hundreds, reports the *Times*, "in a state of semi-starvation," turning over the refuse of the streets for food. Of 500 collieries in Monmouth and Glamorganshire, only twenty are working full time. Lord Aberdare distributes soup in hundreds of quarts a day, but a national subscription would appear to be required. It is most disheartening to find how slow the progress towards thrift is in the trades which require strong men. A little economy during the five prosperous years would enable all colliers to tide over the two unprosperous years without difficulty, but at present the only hope is the poor law. Those few who save have to give up their savings to those who have spent.

HEAT REGULATOR FOR BLAST-FURNACES.—A new appliance, serving as a regulator of hea when utilizing the waste gases of furnaces, has been adopted at the Chatillon and Commentry Iron Works. It is placed between the point of exit of the waste gases and the spot where they are turned to account. It consists of a masonry chamber, of form and dimensions to suit the case, containing firebrick partitions, or simply bricks arranged so as to leave spaces between them, through which the flame may circulate. The arrangements of the bricks or partitions may vary equal to that of the flue for the flames and gases, so that there may be rather a reduction than an increase in the speed of the current; that is to say, that there be no sensible diminution of the draught, notwithstanding the interposition of as large a mass of brickwork as possible.

MANUFACTURE OF FERRO-MANGANESE IN FRANCE.—The Saint-Louis Iron Works, near Marseilles, recently sent to the Paris Civil Engineers' Society a specimen of its ferro-manganese, or, to speak more correctly, manganese pig. In 1862 the works began to make manganese pig, delivering to steelmakers in the Loire and Isere a white pig, called "facette" pig, which contained 3 to 6 per cent. manganese. In 1864 were adopted processes borrowed from those used in Siegen; and spiegeleisen, containing 9 to 10 per cent. of manganese, was made at a time when the manufacture of speiegeleisen was elsewhere all but localized on the banks of the Rhine. The Saint-Louis manganese pig now contains up to 85 per cent. manganese. The sample shown to the Society was granular, of a gray, approaching the color of steel rather than that of grey or white pig. The reduction of manganese oxides is found not to be easy; the same furnace which would produce 50 to 60 tons per diem of steely gray pig, can only be made to produce 20 to 24 tons of alloys rich in manganese.

THE WAGES PAYMENTS OF THE CALIFORNIA (NEV.) MINE.—From the annual report of the California Mining Co. we make the following extracts showing the amounts paid to its employes during the past year:

306 days' labor at $250 per month	$2,500 00
255 days' labor at $200 per month	1,600 00
19 days' labor at $7 per day	133 00
3,195½ days' labor at $6 per day	7,173 00
32 days' labor at $5.50 per day	176 00
7,233½ days' labor at $5 per day	36,167 50
940 days' labor at $4.50 per day	4,230 00
178,134 days' labor at $4 per day	712,536 00
3,359 days' labor at $3.50 per day	11,756 50
30 days' labor at $3 per day	90 00
Total	$776,362 00

Average daily wages, $4.05½.

THE LOUISIANA SALT MINE.—This extraordinary deposit of rock salt, in what is known as *Petit Anse* Island, Parish of Calcacieu, Louisiana, is surrounded by marshes. The Island is about two miles in diameter, with a very uneven surface; part of it rises two hundered feet above tide water in the bayous that embrace it, nearly in the centre. The mines were discovered and worked in 1862, for the use of the Confederate armies. It is known to spread over one hundred and sixty-five acres, and is covered with sixteen feet of soil. How thick it is no one knows, no bottom having been found by drilling to a depth of eighty feet. The salt, in solid masses of perfect pure crystals, is taken out by blasting, like coal. None has been mined for some time, owing to the lack of cheap transportation and to the low rate at which Turk's Island salt is laid down in New Orleans by the cotton ships which bring it for ballast. There is a horse railroad to a bayou leading out to Vermillion Bay, but only small vessels can come up to the landing. The cutting of a short canal would give facilities for getting the salt to market in large quantities at low cost. It will probably not be long before the mine will prove a fortune to its owners. The Island now belongs to Judge Avery, a venerable gentleman who lives upon it with his children, and dispenses a generous hospitality.

THE DEEPEST ARTESIAN WELL.—The deepest artesian well in the world is being bored at Pesth, and has reached already a depth of 951 metres. The work is undertaken by the brothers Zsigmondy, partially at the expense of the city, which has granted £40,000 for the purpose, with the intention of obtaining an unlimited supply of warm water for the municipal establishments and public baths. A temperature of 161° F. is shown by the water at present issuing from the well, and the work will be prosecuted until water of 178° is obtained. About 175,000 gallons of warm water stream out daily, rising to a height of 35 feet. This amount will not only supply all the wants of the city, but convert the surrounding region into a tropical garden. Since last June the boring had penetrated through 200 feet of dolomite. The preceding strata have supplied a number of interesting facts to the geologist, which have been recorded from time to time in the Hungarian Academy of Sciences. Among some of the ingenious engineering devices invented during the course of the boring are especially noteworthy the arrangements for driving in nails at the enormous depth mentioned above, for pulling them out (with magnets), for cutting off and pulling up broken tubes, and above all, a valuable mechanical apparatus by means of which the water rising from the well is used as a motive power, driving the drills at a rate of speed double that previously imparted from the mouth of the well. —*Nature.*

CONDITION OF THE GERMAN IRON TRADE.—A German correspondent of the Charleroi *Moniteur* writes as follows: "There are people who fancy themselves less harshly used by Fate if they see others as badly used. To such I would recommend a tour in Germany. The prostration of industry here is painful to witness, three-fourths of the works built so few years since with the French milliards are in liquidation, and Germany begins now to see that her pan-Germanic ideas, however pretty politically, do not bear looking at commercially and industrially. And herein I refer more particularly to metallurgy. Such of the forges of Westphalia and Silesia as continue at work only do so at the greatest sacrifices, and must inevitably succumb, at least as far as rolled iron is concerned. To say nothing of Alsace and Lorraine, there is Belgium with her enormous production, of which but a small part can be consumed at home; and if Germany must live so must Belgium. There is an inclination to revert to theories of protection. With productive duties life would come back to German trades and manufactures. Indeed, I have found but few—though I have found some—who do not believe that a duty on iron would reinvigorate the iron trade of Germany. But Alsace and Lorraine produce alone more than all Germany can consume, and iron would not rise in price by the exclusion of the foreign article. The firm of Carl Schultze, of Prenslau, prosperous enough but a few years back, has recently stopped payment; the Rhenish Steelworks are calling their creditors together, and if rumor be credited other large concerns in Westphalia will before long be doing so, too." A French newspaper, unfriendly, perhaps, to the often-mooted idea of a metropolitan railway for Paris, points ironically to that built at Berlin after the war, in view of a vast increase of population. Berlin has, it is true, grown to a million inhabitants, but its metropolitan railway, costing close on four millions sterling, and appointed with everything necessary for successful traffic is in difficulties for want of passengers.

The German Iron and Steel Association held its yearly meeting on December 7th, at Konigshutte, and lamented over the evil destiny of the industries under its care, for the sufferings of which they can find no other explanation than the vicious policy of free trade. M. Peterson has laid before the Aachen Engineers' Association a sort of builders' vade-mecum for the use of iron for beams, columns, etc., in buildings, containing resistance, cost relative to stone and brick, etc., etc. Nor would it be amiss if, under some new clause in our own Building Act in England, low-minded builders could be compelled to use iron up to a certain weight in certain elementary parts of house carcases. Before the Hanover Association Mr. Frecht described the process adopted at Kladno, in Bohemia, for the dephosphorization of iron ores. The process was the simple one of wetting the ores with a mixture of sulphuric acid and water. The vats were tanks large enough to hold 500 tons of ore, and when filled, each tank was covered up so as to prevent the evaporation of the sulphurous acid. The soaking went on for twenty-four hours, at the end of which period the ore had lost 1·25 of its phosphor, the percentage having been reduced from 1·50 to 0·25 per cent. At the bottom of the tank were found phosphor salts, for which a good price was obtained for manure. No further elimination of phosphorus was attempted on account of the expense.

NEW CLOSE FURNACE.—At Eitorf, near Cologne, may be seen at work a patent system of close furnace, the principal features of which are the inner forced draught or blast, the self-acting rake, and the automatic discharge. This system of furnace, which lends itself to the operations equally of the metallurgist or chemist, has been adopted, with very good results, by the *Societe anonyme des mines du Rhin* for treatment of cupriferous quartz. This patent furnace, which is heated from below, is circular in form and measures three metres (nine feet ten inches) in diameter. The charge is from 500 to 600 kilogrammes (say ten to eleven cwt.), which is completely desulphurized in two hours, or two hours and a half at most. The ore is fed at the top at two openings which are afterwards luted down. In a line with the axis of the furnace is introduced a vertical shaft, passing through an asbestos stuffing. At its upper extremity, free of the furnace, the shaft gears into a toothed wheel from which it takes its motion. The lower end of the shaft carries four cross arms solidly fixed upon it. These are horizontal, and formed each of a tube of about 0m·10 (four inches) pierced with holes, and of a coupled bar of the cast iron provided with teeth 0m·12 to 0m·15 (four and a quarter to six inches) in length. To each tooth in these rakes there corresponds a hole in the tube. The four arms are fixed in a central cast-iron box which turns slowly round with the whole apparatus. Its surface comes in contact with that of another box placed above the sole. These two boxes are kept in contact by a strong iron hoop. The movable part of the apparatus is suspended by its upper portion above and out of the furnace. Air is blown in by a ventilator through a system of tubing placed in the flame current to the lower box, whence it is distributed to each of the four arms. Each rake traces an independent channel as soon as made, receives a jet of pure superheated air. When the work is over a set of adjustable shovels clear the furnace automatically through a trapdoor near the circumference of the sole. As the furnace is shut in close the vapors and products of combustion are carried into a water-chest, where they are kept in motion under pressure. There is thus no loss possible by volatilization, and the gases when liberated come out from the scrubbing innocuous. Air and ore are, of course, both introduced, but it will be clear that their introduction will cause no loss of heat in the furnace. The automatic stirring does away with the employment of trained workmen. The work, too, is better and more regularly done. Taking steam-engine and furnace both into account, the consumption of fuel is lower than with systems hitherto adopted, while labor charges will evidently be low. It is thought that this furnace has the prospect of being converted to many different uses by the addition of various reagents to the matters under treatment, and by blowing in water or other gas instead of air. It may be thus looked upon as a complete industrial dry-way laboratory. At Eitorf it is proposed to treat gray copper in this furnace. Calcining with rock salt, arsenic and antimonium chlorides will, it is presumed, be volatilized. Taking the copper carried off mechanically, the greater part of it will be got back by lixiviation free from injurious alloys.—*Iron.*

INDEX OF CURRENT TECHNICAL LITERATURE.

EXCHANGES.

[In this department will be given abstracts of the more important original articles contained in current technical periodicals at home and abroad.]

The following gentlemen have kindly consented to assist in making the reviews of current technical periodicals:

JOHN C. RANDOLPH, Mining Engineer, New York.
Prof. TROWBRIDGE, School of Mines, Columbia College, New York.
Prof. H. S. MONROE, " " " " "
Prof. T. EGLESTON, " " " " "
ARTHUR F. WENDT, Mining Engineer, New York.
MANSFIELD MERRIMAN, Yale Scientific School, New Haven, Conn.
FRANKLIN GUITERMAN, Mining Engineer, Cincinnati, Ohio.
Prof. P. deP. RICKETTS, Ph. D., School of Mines, New York.
Prof. E. A. FUERTES, Cornell University, Ithaca, New York.

ASSAY DEPARTMENT OF THE ENGINEERING AND MINING JOURNAL.

This department is opened for the benefit of miners, prospectors, and others interested in minerals.

Replies will be made in these columns, and *without charge*, to questions asked regarding the nature and commercial value of minerals, and of samples sent.

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(P. O. Box 4404, 27 Park Place, New York.

WESTERN OFFICE.

329. G. W. T., Kingston Furnace, Mo.—The sample contains principally galena, with some antimony. The blow pipe shows some silver, but how much it is impossible to say without an assay. The ore probably also contains nickel in small quantities.

330. J. G., Leadville, Col.—No. 1, white transparent material is semi-opal; too soft to polish well for a gem, and also does not show the fire. No. 2, fine grained sand. Will make an excellent polishing material almost pure. An extensive deposit of this may be of value at no distant day, if you can cut it out of the vein in large clean blocks.

331. S. J. J., Rosita.—The sample showed neither nickel nor tellurium.

332. E. G. F.—Sample is simply a cluster of iron garnets—no tin.

332. R. A. K., Fairplay.—Semi-anthracite coal contains over 90 per cent. fixed carbon. By far the best looking coal yet found in the State.

White Monument Lode, Idaho.—The spar associated with the copper is calcite (carbonate of lime).

E. Sanborn, Kansas City.—No. 1 is a sulphide of iron and copper; No. 2, a very impure lignite; No. 3, slate.

333. South Park Salt Springs.—One pint of water yielded 22 grams of mineral matter, which contained, on being sun dried, 51 per cent. of chlorine, and after being furnace dried, 55 per cent.

334. E. F., Animas City, Colo.—Coal, carbon, 81 per cent.; water, 3½ per cent.

335. A. J. R., Fort Collins.—Iron, 32 per cent. Copper, 12 per cent. Nickel, 6½ per cent.

336. C. R. N., Elmoro, N. M.—Mineral water. 1 pint yielded 11 grams, as follows: carbonate of soda, 46 per cent; chloride of sodium, 3 per cent.; chloride of magnesium, 12·3. Balance was iron and alumina.

337. J. E. C., Leadville, Colo.—Silver, 4 oz.

338. A. S., Hall Valley, Colo.—Silver, 5 oz.

339. W. A. B., New Mexico.—Silver, 6·7 oz.

340. W. F., Boulder Canon.—Silver, 2·5 oz.

341. S. J. J., Rosita, Colo.

342. T., Hall Valley.—Silver, 35½ oz.; gold, ¼ oz.

343. W. A. B., New Mexico.—Silver, 7·5 oz.; gold, ¼ oz.

344. T., Hall Valley.—Silver, 16½ oz.; gold, trace.

345. W. F., Boulder Canon.—Silver, 2 oz.; gold, trace.

346. N. B. B., Garland.—Silver, 17 oz.; gold, trace; copper, 5·8 per cent.

347. B., Magnolia.—Gold, 1½ oz.

348. W. & D., Laramie, Wyoming.—Silver, 13·1 oz.; gold, 6·31.

349. C. C. R., Salt Lake.—No. 1. Silver, 46 oz.; lead, 61·5 per cent. No. 2. Silver, 18½ oz.; lead, 57·1 per cent. No. 3. Silver, 11½ oz.; lead, 12·2 per cent. No. 4. Silver, 26 oz.; lead, 39·6 per cent. No. 5. Silver, 22 oz.; copper, 41·3 per cent.

350. L. R. N., Ft. Collins.—Silver, 18 oz.; gold, ¼ oz.; copper, 16·3 per cent.

351. G. F. R., Rawlins, Wyoming.—Silver, 21 oz.; copper, 46·2 per cent.

STATISTICS OF COAL PRODUCTION.

This is the only Report Published that gives full and accurate returns of the production of our Anthracite mines.

Comparative statement for the week ending Jan. 19, and years from Jan. 1.

Tons of 2,240 lbs.	1878. Week.	1878. Year.	1877. Week.	1877. Year.
Wyoming Region.				
D. & H. Canal Co.	56,371	148,627	33,319	90,124
D. L. & W. R. R. Co.	43,572	122,754	34,315	99,812
Penn. Coal Co.	5,433	38,721	12,866	42,011
L. V. RR. Co.	33,928	75,061	22,584	52,189
P. & N. Y. RR. Co.	148	949	90	1,151
R. RR. of N. J.	31,257	63,083	26,447	74,335
	170,692	453,795	129,621	359,622
Lehigh Region.				
L. V. RR. Co.	78,774	158,534	41,767	95,288
C. RR. of N. J.	15,405	38,015	17,038	25,389
D. H. & W. D. RR.				
	94,159	196,549	58,805	120,677
Schuylkill Region.				
P. & R. RR. Co	2,122	103,788	78,691	188,998
Shamokin & Lykens Val.	5,038	18,220	8,659	24,226
	7,159	122,008	86,750	213,224
Sullivan Region.				
Sul. & Erie RR. Co.	780	2,133	251	732
Total	272,790	774,488	275,427	694,255
Increase		80,235		
Decrease	2,637			

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent. of the whole production.

Receipts and shipments of coal at Chicago Ill., for the week ending Jan. 19, and year from Jan. 1:

	Week. Tons.	Year. Tons.
Receipts	21,931	51,941
Shipments	4,566	12,462

Perth Amboy business:

	Tons.
Received for the week	24,193
Shipped for the week	18,451
On hand Jan. 19	106,987

The increase of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 14,770 tons as compared with the corresponding period in 1877.

Receipts of Coal at Boston, for the week ending Jan. 18, and years from Jan. 1:

Tons of 2,240 lbs.	1878. Week.	1878. Year.	1877. Week.	1877. Year.
From Alexandria and Georgetown	1,479	1,479		
Philadelphia	13,586	26,221	4,000	8,420
Baltimore	6,972	6,972		2,440
Other places	11,649	21,785	660	3,268
Great Britain	2,092	3,141		610
Nova Scotia		171		
Total	35,778	59,769	4,660	14,738

The Production of Coke for the week ending Dec. 28.

Tons of 2,000 lbs.	Week.	Year.
West Penn. R. R.	466	57,636
Southwest Penn. R. R.	15,374	629,150
Penn. & Westmoreland Region, Pa. R. R.	888	64,625
Pittsburg, Penn. R. R.	1,231	107,284
Total	17,959	828,695

The Production of Bituminous Coal for the week ending Jan. 19, was as follows:

Tons of 2,000 lbs., unless otherwise designated.

	Week, Tons.	Year, Tons.
Cumberland Region, Md.		
Tons of 2,240 lbs.	20,371	44,161
Barclay Region, Pa.		
Barclay R. R. tons of 2,240 lbs.	7,229	17,557
Broad Top Region, Pa.		
Huntingdon and Broad Top R. R.	3,489	8,845
*East Broad Top	1,317	54,256
Clearfield Region, Pa.		
*Snow Shoe	443	42,814
*Tyrone and Clearfield	18,735	1,355,838
Allegheny Region, Pa.		
*Pennsylvania R. R.	3,186	183,365
Pittsburgh Region, Pa.		
*West Penn. R. R.	2,632	185,910
*Southwest Penn. R. R.	453	38,698
*Penn & Westmoreland gas coal, Pa. R. R.	18,204	772,967
*Pennsylvania R. R.	4,646	377,936

*For the week ending Dec. 28

THE COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 25, 1878.

Anthracite.

The business in anthracite coal is as quiet as it has ever been our duty to report. This is accounted for by the mild weather which has prevailed during the winter, and a lack of faith on the part of buyers in the combination, and its ability to maintain the prices at which some of the companies quote coal. The combination has looked quite unhealthy for a week past. The question of penalties has had a very unsettled look, while the knowledge that the agreement so far as entered into, is only a verbal one, does not tend to create confidence. Then again, one of the companies, or its agents, had sold, within the week, large lots of coal, at prices which mildly indicate that this company does not believe production will be controlled. The business doing is almost, if not wholly, at prices ranging from 30 cts. to 75 cts. under the published circulars. The excuse for this is that all the coal now selling is "on the market," and until this is all sold no increase in prices is thought of. There appears to have been considerable coal put on the market unnecessarily about the time the combination was formed, and it is very questionable if a great deal more will not, by some means, be placed in the same position, prolonging the period of low prices even though there should not be other causes to do it. The following is a reliable (almost official) estimate of the stock of coal in first hands. It was made during this week.

	Tons.
Philadelphia & Reading Railroad Company	175,000
Lehigh & Wilkes-Barre Coal Company	75,000
Delaware, Lackawanna & Western Railroad Co.	40,000
Pennsylvania Coal Company	25,000
Delaware & Hudson Canal Company	25,000
South Amboy	75,000
Perth Amboy	150,000
Elizabethport	25,000
	590,000
In yards	40,000
	630,000

Of the above, about 130,000 tons is pea and No. 2 chestnut.

During an ordinary winter the average consumption of anthracite coal in New York and vicinity is about 90,000 tons per week, but during such a winter as we have had, it is very difficult to say what it is. The coastwise steamships are using about 25,000 tons of anthracite coal per month.

The production of coal is at present largely curtailed, but the stoppage is chiefly confined to the Lehigh and Schuylkill regions.

The Delaware, Lackawanna and Western Railroad Company announces 50,000 tons of coal to be sold at auction next Wednesday, the 30th instant. Unless the other companies interested in maintaining prices should take up this coal, it is likely to sell considerably under the published circular rates, and put "on the market" an additional quantity of coal.

THE COMBINATION MEETING.

(*Special despatch to the Engineering and Mining Journal.*)

PHILADELPHIA, January 25, 1878.

The production for January, February and March agreed upon. It gives each region about two weeks, work in each month at moderate rate of shipment. The assessment of 15 cts. per ton fully arranged. Session harmonious and short.

Bituminous.

There is no change in this branch of the coal trade. The demand is very quiet and prices as they have been during the winter months.

A meeting of the Cumberland producers will take place in Cumberland to-morrow, after which we may be better able to judge the probable course of that trade for this year.

New York.

Wholesale Prices of Anthracite Coal f. o. b. at Tide Water Shipping Ports, per ton of 2,240 lbs.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
WYOMING COAL.						
Lackawana, at Weehawken	$3 25	$3 25	$3 25	$3 35	$3 75	$3 50
*Pittston, at Weehawken	3 25	3 25	3 25	3 35	3 75	3 50
Wilkesbarre, at Port Johnson	3 25	3 25	3 25	3 35	3 75	3 25
Lehigh Valley Coal Co., at Amboy	.....	3 50	3 25	3 35	3 75	.....
Plymouth R. A., at Port Johnston	.....	.....	3 25	3 45	3 85	3 35
LEHIGH						
Old Company's, at Port Johnston	3 75	.....	3 40	3 50	3 75	3 25
Honey Brook Lehigh, at Port Johnston	3 75	.....	3 40	3 50	3 75	3 25
Lehigh Valley Coal Co., at P. Amboy	3 75	.....	3 50	3 50	3 75	3 25
Mount Pleasant, at Hoboken	3 50	.....	3 50	3 50	3 75	3 00
Hazelton, at Hoboken	3 50	.....	3 50	3 50	3 75	3 00
Cross Creek, at Port Johnston	3 75	.....	3 50	3 50	3 75	3 20

* Forty cents per ton additional for delivery in New York.

Wholesale Prices of Bituminous Coal.

DOMESTIC GAS COALS.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Pennsylvania		
At Greenwich, Philadelphia	$4 70	$5 50
At S. Amboy	5 00	5 50
Kanawha at Richmond	4 10	5 40
Red Bank Cannel, Pa., at Philadelphia	8 00	8 50
Youghiogheny, Waverly Co., at Balt	4 50	5 65
Despard, West Va.	4 50	6 00
Murphy Run, West Va., at Baltimore	4 50	5 85
Fairmount, West Va., " "	4 40	5 70
Newburg Orrel, Md. " "	4 50	6 00
Cannelton Cannel, West Va		10 00
" Splint " at Richmond	6 00	7 00
" Gas Coal at Richmond	4 00	5 65
Peytona Cannel, W. Va., at Richmond		10 00

MANUFACTURING AND STEAM COALS.

Cumberland at Georgetown and Alexandria	2 85@3 10	4 35@4 50
Cumberland, at Baltimore	3 10@2 25	4 35@4 50
Cl'rfi'd "Eureka" and "Franklin."		
At mines	0 75	.....
At Baltimore	3 25	4 50
At Philadelphia	3 25	4 50

FOREIGN GAS COALS.

	Sterling.	Am. cur'ncy.
Newcastle, at Newcastle-on Tyne	8s.6d.@10s.6d.	$5 50@ $6 00
Liv. House Orrel, at Liv.	25s.	13 00
Ince Hall Cannell "	35s.6d.	18 00
" Gas Cannel "	25s.6d.	10 00@ 10 50
Scotch Gas Cannel, at Glasgow, nominal	25s.	7 50
	Gold.	
Bl'k House, at Cow Bay, N.S.	$1 75	$4 50
Caledonia, at Pt. Caledonia	1 50	4 25
Glace Bay, at Glace Bay	1 60	4 25
Lingan, at Lingan Bay	1 75	.....
Intern'l Mines, at Sydney	1 75	4 50
Pictou, Vale Mines, at Pictou	2 00	4 70

Retail Prices.

Per ton of 2,000 lb,

Anthracite.

	G. & Egg.	Stove.	Chest.
Pittston coal delivered	$5 00	$5 00	$5 00
Lack. coal, delivered below 59th St.	4 50	4 50	4 50
Wilkes-Barre, delivered above Canal Street	4 50	4 75	4 50
Wilkes-Barre, deliv'd below Canal Street	4 25	4 50	4 25
Lehigh and Locust Mountain, delivered above Canal Street	5 00	5 00	4 75
Lehigh and Locust Mountain, delivered below Canal Street	4 50	4 75	4 50

Bituminous.

Liv. House Orrel	$18 00	American Orrel	$11 00
Liv. House Cannel	18 00	Red Bank Cannel	7 00
Am. "	11 00	Cumberland	9 00
Ca'n'lt'n Bl'k, or splint.	10 00		

Baltimore. Jan. 21, 1878.

Specially reported by Messrs. E. STABLER, Jr., & Co.

Wholesale Prices per ton of 2,000 lbs.

In cars at Depot N. C. R. R.

HARD WHITE ASH, FREE-BURNING WHITE ASH, SHAMOKIN, ETC.

Lump and Steamboat	$3 80	Stove	$4 10
Broken	3 90	Chestnut	3 70
Egg	4 00		

LYKENS VALLEY RED ASH.

Broken, Egg and Stove.	$4 30	Chestnut	$3 90

From yard or wharf to dealers, 50@75c. per ton additional for all kinds and sizes.

Buffalo, N.Y. Jan. 23, 1878.

Specially reported by C. M. UNDERHILL.

The following are the prices of Lackawanna, Scranton, Henry Clay and Black Diamond coals, per ton of 2,000 lb. for Buffalo local trade for the present.

	To Dealers.			To Consum
	F. O. B.	On car or boat.	In yard, screened.	Delivered at yard. Retail.
Grate	$4 45	$3 95	$4 15	$5 20
Egg	4 45	3 95	4 15	5 20
Stove	4 70	4 20	4 40	5 45
Chestnut	4 60	4 10	4 30	5 35
Blossburg	4 00	3 85	4 35	5 00

Specially reported by LEE & LOOMIS.

Per ton of 2,000 lb. delivered on cars.

	Lump.	Run of Mine.	Nut.	Slack.
Connellsville coke	$5 00	.....	.....	.....
Brookfield Coal	3 55	.....	.....	.....
Brier Hill	3 55	.....	.....	.....
" " 2d quality	3 30	.....	.....	.....
Youghiogheny	4 00	.....	.....	.....
Monterey	.....	2 85	.....	2 00
Catfish	.....	2 85	.....	2 00
Stoneboro'	.....	.....	2 75	2 00
Sterling Cannel	5 00	.....	.....	.....

Chicago, Ill. Jan. 21, 1878.

Specially reported by Messrs. RENO & LITTLE.

Retail prices of coal delivered per ton of 2,000 lb.

Lakawanna Stove	$6 75	Erie and Brier Hill	$5 50
" Chestnut	6 75	Wilm'gton & Ill.	$3 50@4 00
" Grate	6 75	Blossburg	6 50
" Egg	6 50	Piedmont	7 50

Cincinnati, O. Jan. 21, 1878.

Specially reported by the Consolidated Coal and Mining Co.

Per bushel of 72 lbs.

	Retail delivered.	Wholesale afloat.
Youghioghney	11c.	7½c.
Camden	9c.	5½c.
Cannel	17@18c.	13c.

Anthracite, delivered, $7@$8 per ton of 2,000 lbs.

Cleveland, O. Jan. 20, 1878.

Specially reported by F. A. BATES, Esq.

Per ton of 2,000 lb. f.o.b. vessels.

WHOLESALE.

Brier Hill (Church Hill)	$3 30
" " No. 2 Grades	3 10
Straitsville Lower Vein	2 75
Hocking Valley	2 75
Massillion (No. 2 grades 15 cents less)	2 75
Tuscarawas Valley	2 30
Columbiana	2 30
Nut coal, various grades	$1 90@2 20
Screenings " "	1 35@1 75
Youghiogheny gas coals	3 75

RETAIL TRADE.

	1 to 10 tons Tons.	Upw'd
Brier Hill lump	$4 60	3 75
" " nut	3 75	3 50
Straitsville Lower Vein and Hocking lump.	3 50	3 25
" " " nut	3 60	3 35
Rich Hill lump	3 40	3 15
" " nut	3 50	3 35
Columbiana, lump	3 25	3 00
" nut	3 00	2 75
Lacka'a., Wilkes-Barre and Pittston egg and grate	2 50	2 35
Lackawanna, Wilkes-Barre and Pittston stove	6 10	5 85
" " " chestnut	6 25	6 00
	6 25	6 00

Lehigh $1 per ton higher.

All sales to be strictly cash with order or C.O.D.

Hamilton, Ont. Jan. 21, 1878.

Specially reported by H. BARNARD.

Retail prices delivered per ton of 2,000 lb.

Scr. or Wilkes-B. Grate	$5 00	Lehigh Lump	$6 00
" " Egg	5 00	Brier Hill	5 50
" " Stove	5 25	Massillon	4 50
" " Nut	5 25	Smithing	5 50

Indianapolis, Ind. Jan. 21, 1877.

Specially reported by Messrs. COBB & BRANHAM.

WHOLESALE BITUMINOUS.

On board cars, per ton of 2,000 lb.

White River	$2 65	Hocking Valley	4 25
Brazil Block	2 60	Raymond City	4 60
Highland, grate	2 25	Youghiogheny	4 60
Indiana Cannel	4 60	Blossburg (smithing)	6 10
Peytona	5 75	Piedmont "	6 10

Per car, 12 tons.

Block coal, nut	$18 00	Block Slack	$17 00
Highland, "	18 00		

RETAIL BITUMINOUS.

Delivered per bushel of 70 lb.

White River	13c.	Block Nut, steam use	8c.
Brazil Block	13	" Slack, "	7
Highland Grate	11	Virginia Cannel	25
Block Nut, domestic use	11	Youghiogheny	18
Highland Nut, " "	11	Blossburg	26
" " steam	8		

GAS COKE.

Per bushel, measure containing 2,888 cubic inches.

Retail, crushed	14c.	Wholesale	9c.
" lump	12		

ANTHRACITE.

Per ton of 2,000 lb.

Wholesale on Cars.		*Retail delivered.*	
Wilkes-Barre, all sizes	$5 75	Wilkes-Barre, all sizes	$7 50
Lackawanna, "	6 25	Lackawanna, "	7 00
Lehigh "	6 75	Lehigh, "	7 00

Louisville, Ky. Jan. 21, 1878.

Specially reported by Messrs. BYRNES & SPEED.

Wholesale per bushel of 72 lb.

Pittsburg	8c.	Raymond City	7½c.
Ashland (Ky.)	7	Kentucky, on cars	8

Retail.

Pittsburg	$3 00	Anthracite, per ton	$7 50
Raymond City	2 75	City Made Coke, per bsh	7c.
Ashland (Ky.)	2 50	Soft Coke, per bushel	7c.
Pittsburg nut	2 50		

Montreal. Jan. 21, 1878.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Wholesale per 2,240 lb.

Scotch Steam	$4 75	Cape Breton Steam	$4 25
Pictou	4 50	Newcastle Smith's	6 00

Anthracite at retail, per 2,000 lb. delivered.

Stove	$6 00	Chestnut	$5 75
Egg	5 75		

Milwaukee, Wis. Jan. 21, 1878.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2,000 lb.

Anthracite, Egg, Chestnut and Stove	$6 50		
Lehigh lump	$7 00	Connellsville coke on RR. track	7 25
Brier Hill	5 25	Straitsville	4 80

New Orleans, La. Jan. 21, 1878.

Specially reported by Messrs. C. A. MILTENBERGER & Co.

PITTSBURG COAL.

At wholesale (by boat-load)	35c. per bbl. of 180 lb.		
To steamboats	50c.	"	"
" manufactories	50c.	"	"
" families	75c.	"	"
In hhds. (for shipment)	$7 per hhd. from 5 to 6 bbls.		

ST. BERNARD (KY.) COAL.

To steamboats	45c. per bbl. of 180 lb.		
" families	65c.	"	"

ANTHRACITE COAL.

Per ton of 2,000 lb.

At wholesale	$7 00 to $8 00
" retail	11 00 to 12 00

Philadelphia, Pa. Jan. 24, 1878

Specially Reported.

There is nothing doing here in shipments.

The local trade is dull and the bulk of the business is from the Lehigh region—although Schuylkill is started this week and Lehigh stopped—the last are booking considerably more orders than the first. The rash action of Schuylkill about tolls and prices taken within a few weeks not being followed by the Lehigh, the last have had a decided advantage ever since. There is certainly not an over supply of brain in the parties conducting the Schuylkill business and trying to avoid the results of an over supply of coal.

Freights are nominal.

The Board of Control, Lehigh and Schuylkill operators, all have meetings this week and early next week to fix quota, rates, etc., for the month of February—and it is to be hoped that the experience of the last few weeks will result in harmonizing better the different interests. If not done the combination will have but a short life.

Pittston, Pa. Jan. 21, 1878.

Pennsylvania Coal Com pany's Coal in Yard.

Retail per ton of 2,000 lb.

Lump, Egg, and Stove	$2 25
Chestnut	2 00
Pea	1 00

Delivered, 50 cents per ton additional.

Richmond, Va. Jan. 21, 1878.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2,240 lb. f.o.b.

Kanawha Cannel	$9 00	New River Bituminous	$3 70
Coalburg Splint	5 70	Clover Hill Coal	3 00
Lewiston	5 70	Norwood Gas and	
Kanawha Gas Coal	4 90	Steam Coal	2 70

Sandusky, Ohio. Jan. 21, 1878.

Specially reported by C. E. BLACK, Agent Con. Coal and Mining Company.

We quote coal on cars at Sandusky, as follows:

Per ton of 2,000 lb.

ANTHRACITE.

	Grate.	Egg.	Stove.	Chest.
Lehigh	$6 50	$6 50	$6 50	$6 50
Wilkes-Barre	5 75	5 75	5 75	$5 75
Lackawanna	5 75	5 75	5 75	5 75

BITUMINOUS.

Massillon	$3 00	Straitsville	$2 70
Del Carbo	2 75	Shawnee	2 70
Hocking Valley	2 70	Blossburg	4 75

Prices retailed delivered 50c.@75c. above car prices.

Freights.

Per ton of 2,240 lb.

Representing the latest actual charters to Jan. 24, 1878.

PORTS.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me			
Albany			
Alexandria, Va			
Brooklyn, N. Y			
Bangor, Me			
Bath, Me			$1 50
Baltimore			
Boston, Mass		$1 75	1 50
Bridgeport, Conn.		1 40	70
Bristol, R. I.			90
Beverly, Mass			1 50
Cambridge, Mass.			1 50
Charleston, S. C.			
Danversport, Mas			
East Cambridge, Mass			
Fredericksbrg, Va			
Fall River			90
Gloucester			
Georgetown, D.C.			
Hartford, Conn			
Hoboken			40
Hudson, N. Y			
Jersey City			40
Lynn, Mass			
Marblehead, Mass			
Middletown			90
Milton, Mass			
Nantucket, Mass.			90
New Bedford			90
Newburyport		1 90	1 75
New Haven		1 40	70
New London		1 40	70
Newport			90
New York	$1 15	1 40	40
New Orleans, La.			
Norfolk, Va	85		
Norwich			90
Norwalk, Conn			1 00
Philadelphia			
Portland		1 85	1 50
Portsmouth, N.H.		1 90	1 65
Providence		1 40	90
Quincy P'nt, Mass			
Rockport			
Richmond, Va			
Saco			
Salem, Mass		1 75	1 50
Saybrook, Mass			
Savannah, Ga			
Somerset, Mass			90
Troy			
Wareham			
Washington	1 50		
Wilmington, N.C.			
Wilmington, Del.			

* And discharging and towing. † And discharging. ‡ And towing. §3c. per bridge extra.

St. Louis, Mo. Jan. 21, 1878.

Reported by JAMES J. SYLVESTER, Secretary of the Anthracite Coal Association.

Retail prices, delivered. Ton of 2,000 lb.

ANTHRACITE.

	Per ton.		Per ton.
Lackawanna	$8 00@8 50	Schuylkill	$8 00@8 50
Wilkes-Barre	8 00@8 50	Lehigh	9 00@9 50

BITUMINOUS.

Blossburg	$9 00	Big Muddy	$3 00
Pittsburg	4 50	Illinois Coals	2 50@3 00
Indiana Block	4 00	Connells. Coke	6 50

Toledo, Ohio. Jan. 21, 1878.

Specially reported by Messrs. GOSLINE & BARBOUR.

We report prices of coal on cars at Toledo as follows:

Ton of 2,000 lb.

Straitsville lump	$2 70	Hocking Valley nut	$2 30
" nut	2 30	Massillon lump	3 00
Shawnee lump	2 70	Cumberland	5 40
" nut	2 30	Blossburg	5 40
Hocking Valley lump	2 70		

Prices of hard coals on cars at Toledo are as follows:

Ton of 2,000 lb.

	Grate.	Egg.	Chestnut.	Stove
Pittston	$5 55	$5 55	$5 70	$5 80
Wilkes-Barre	5 55	5 55	5 70	5 80
Lackawanna	5 55	5 55	5 70	5 80
Lehigh	6 15	6 15	6 30	6 40

For retail delivery in city the prices are as follows: Stove and chestnut $6.45; grate and egg, $6.20 per ton; Lehigh 60c. per ton additional.

Prices soft coal f.o.b. vessel for Lake shipments will be from 15 to 20c. per ton more than prices on cars.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 25, 1878.

American Pig.—The most excessive quietness rules in this article. Prices are nominally unchanged, although perhaps a shade weaker. There is an inclination on the part of some of the companies to stock their products rather than sacrifice them. The extreme quietness that has ruled for full two months cannot last. We should not be surprised if some fair orders were placed during the next two weeks. We quote No. 1 foundry at $18; No. 2 foundry, $17; and forge $16.

Scotch Pig.—In this article the business continues to be of a retail nature. The arrivals during the week have been about 200 tons. We quote Eglinton at $23 to $23.50; Coltnesses, $25.50 to $26, and Glengarnock, $24.

Rails.—We note sales of 2,000 tons in the west and 2,000 tons for delivery here, the latter at fully $1 per ton advance over previous sales. The liberal supply of orders already booked has had a stiffening tendency on prices, especially for early delivery and for small lots. The excessive productive capacity, however, must act against any material advance, and it is very probable that choice orders would still be accepted at as low prices as have ruled for two months past. We quote steel rails at mills at $41 to $43, and iron rails at $32 to $37.

Old Rails.—We are reported sales of about 9,000 tons on private terms. The stock upon the market is at present very small, and the price has an upward tendency, being quoted now at $19 to $19.50. It must be remembered, however, that a large quantity of steel rails have been sold, and when laid there will be fully as large an amount of old rails, of which use will be made at some time.

Wrought Scrap.—We are reported 500 tons sold on private terms. We quote at $22 to $23.

Baltimore, Md. Jan. 21, 1878.

Specially reported by Messrs. R. C. HOFFMAN & Co.

The pig iron market remains unchanged; demand moderate and purchases for immediate use only. Prices ruling as follows:

Balt. Char.	$29 00@$30 00	M. & White	$14 00@$15 00
Va. "	28 00@ 30 00	C'lC.B.Blooms	50 00@ 55 00
Anth. No. 1	19 00@ 20 00	" " Billetts	55 00@ 60 00
" " 2	18 00@ 19 00	Refined and	
" " 3	17 00@ 18 00	Scrap Blooms	45 00@ 50 00

Chattanooga, Tenn. Jan. 21, 1878.

Specially reported by J. F. JAMES, dealer in iron & metals.

PIG IRON.—Market very dull and inactive, with no signs of any improvement. The few furnaces in blast are complaining loudly of low prices obtainable, and express their determination to blow out very shortly unless a change for the better takes place. Considerable pig iron has passed through here from the charcoal furnaces below, and also from "Rising Fawn," the quality of which is anything but up to the standard. The furnaces have made no change in prices, but accept almost any offer for spot, cash.

BAR IRON.—Fair business doing at very unsatisfactory rates.

Tenn., Ala. & Ga. Charcoal, No. 1 Foundry	$18 00@$19 00
Tenn., Ala. & Ga. Charcoal, No. 2 Foundry	17 00@ 18 00
Tenn., Ala. & Ga. Charcoal, Gray Forge	15 00@ 16 00
Tenn., Ala. & Ga. Coke, No. 1 Foundry	19 00@ 20 00
Tenn., Ala. & Ga. Coke, No. 2 Foundry	17 00@ 18 00
Tenn., Ala. & Ga. Coke, Gray Forge	15 00@ 16 00
Tenn., Ala, & Ga. cld B. (car-wheel)	20 00@ 28 00
Charcoal or Coke, white and mottled	14 00@ 15 00
Old rails	$18 00@$19 00
Old car wh'ls.	16 00@ 17 00
Wr'ght scrap, No. 1	17 00
Wr'ght scrap, No. 2	$12 00
Cast scrap	10 00
Muck bar	32 00@ 33 00

Iron Ores.

Red Hematite (about 55 per cent. metallic iron) f. o. c. at mines	$1 25
Brown Hematite (about 55 per cent. metallic iron)	1 75

Cincinnati, O. Jan. 22, 1878.

Specially reported by Messrs. TRABER & AUBERY, Commission Merchants for the sale of pig iron, blooms, ore, etc.

Below please find closing quotations of our pig iron market, viz.:

CHARCOAL.

H'n'g Rock No. 1 Foundry & B 1	$22 00@$23 00	—4 mos.
" No. 2 "	21 00@ 22 00	—4 mos.
" Soft Silver Gray	20 00@ 21 00	—4 mos.
" Mill	18 00@ 20 00	—4 mos.
Tennessee No. 1 Foundry	21 00@ 22 00	—4 mos.
" No. 2 "	20 00@ 21 00	—4 mos.
" Mill	18 00@ 19 00	—4 mos.

STONE COAL.

Ohio No. 1 Foundry	$20 00	—4 mos.
" No. 2 "	19 00	—4 mos.
" No. 3 "	18 00	—4 mos.
" Mill	18 00	—4 mos.

COKE.

Ohio & W. Va. No. 1 Foundry	$21 00@$22 00	—4 mos.
" " No. 2 "	20 00@ 21 00	—4 mos.
" " Mill	18 00@ 19 00	—4 mos.

CAR-WHEEL.

H'n'g R., C. B { Hecla, Vesuvius, Etna, Jefferson. }	$38 00	—4 mos.
Maryland, " Cedar Point	37 00	—4 mos.
Missouri, " Maramec	30 00	—4 mos.
Alabama, " Woodstock	32 00	—4 mos.

BLOOMS.

Charcoal	$45 00@$50 00—cash.

SCRAP IRON.

Cast	40 c.@ 45c.—cash.
Wrought	62½c.@$1 00—cash.

Cleveland, O. Jan. 19.

Specially reported by Messrs. C. E. BINGHAM & Co.

Per gross ton, on four months' time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.

No. 1 L. S. Charcoal	$25 00	Am. S., No. 1, Ch. Val	$24 00
No. 2 " "	25 00	" " B—1, " "	23 00
No. 1 Anthracite	23 00	" " No. 2 " "	22 00
No. 2 "	21 00	No. 1, Massillon	24 00
No. 1 Bituminous	23 00	B—1, "	23 00
No. 2, "	21 00	No. 2, "	22 00

CAR-WHEEL AND MALLEABLE IRON.

No. 3, L. S, Charcoal	$26 00	No. 5 & 6, L. S. Char.	$27 00
No. 4, " "	26 00		

BESSEMER IRON.

No. 1 & 2, L. S. Char	$25 00		

FORGE IRON.

No. 1, Gray	$20 00	White and Mottled	$19 00

Columbus, Ohio.

Specially reported by Messrs. KING, GILBERT & WARNER, dealers in Pig Iron and Ores.

FOUNDRY IRONS.

No. 1 Hanging Rock Charcoal	$23 50@$24 00
No. 2 " " "	22 00@ 22 50
No. 1 Hocking Valley soft and strong from pure limestone ores	21 50@ 22 00
No. 2 Hocking Valley soft and strong from pure limestone ores	20 50@ 21 00
No. 3 Hocking Valley soft and strong from pure limestone ores	19 50@ 20 00
No. 1 American Scotch	20 50@ 21 00
No. 1 Eliza (Jackson County)	20 50@ 21 00
No. 1 Shawnee	20 50@ 21 00
Silver Gray	18 00@ 19 00

MILL IRONS.

Gray neutral	18 50@ 19 00
Mottled and white neutral	17 50@ 18 00
Gray cold short	17 50@ 18 00
Mottled and white cold short	16 50@ 17 00

Louisville, Ky. Jan. 21, 1878.

Specially reported by Messrs. GEORGE H. HULL & Co.

The demand for foundry irons is increasing, and considerable is doing in the other grades. No change in prices. The usual time, four months, allowed on quotations below:

FOUNDRY IRONS.

	No. 1.	No. 2.
Hanging Rock Charcoal	$22 00@$23 00	$20 00@$21 00
Southern Charcoal	20 00@ 21 00	19 00@ 20 00
H'n'g Rock, Stc'l & Coke	20 00@ 22 00	19 00@ 20 00
Southern Stonecoal & Coke	19 00@ 20 00	18 00@ 19 00
"American Scotch"		20 00@ 22 00
Silver Gray		18 00@ 19 00

MILL IRONS.

No. 1 Charcoal, Cold-short & Neutral	$18 00@$19 00
No. 1 Stc'l & Coke, Cold-short & Neutral	17 00@ 18 50
No. 2 Stc'l & Coke, Cold-short & Neutral	16 50@ 17 00
No. 1 Missouri and Indiana, Red-short	20 00@ 22 00
White & Mottled, Cold-short & Neutral	14 00@ 16 00

CAR-WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold Blast	$34 00@$37 00
Alabama and Georgia, Cold Blast	24 00@ 33 00
Kentucky, Cold Blast	25 00@ 33 00

Milwaukee, Wis. Jan. 21, 1878.

Specially reported by Messrs. R. P. ELMORE & Co.

CHARCOAL IRON.

No. 1 Lake Superior per gross ton	$23 00—4 mos.
" 2 " " "	22 00—4 mos.

ANTHRACITE IRON.

No. 1 Anthracite per gross ton	24 00—4 mos.
" 2 " "	23 00—4 mos.

STONE COAL AND COKE.

Warner's Am Sc'th (Bk. Band, per ton	$25 00@	—4 mos.
Soft Silvery per ton	22 00@23 00	—4 mos.
Ohio Stone Coal	22 00@23 00	—4 mos.

CAR WHEEL.

Lake Superior ores per ton	$25 00@27 00—4 mos.

Philadelphia, Pa. Jan. 24, 1878.

Specially reported by JUSTICE COX, JR., & Co., Iron Merchants, 333 Walnut street, Philadelphia.

PIG IRON.—There is little to report this week. The inquiries and sales have been few. The market can be quoted firm, with a desire to advance on the slightest provocation. If one company should advance the price and hold for a day or two every company making iron would follow. Some one with the courage to start the ball is all that is wanted, and as most producers are selling at less than iron can be produced at, the day is not far distant when some company will stop selling at anything but cost or a small profit, and the advance long looked for will come. We quote: No. 1, $18 to $20; No. 2, $17 to $18; Gray Forge, $16 to $18.

MANUFACTURED IRON.—The trade for bars continues to improve, and orders are only accepted at full quotations. The advance in old rails makes low price iron scarce, and full pricees are asked by makers of this quality of iron. In plate and tank nothing new is reported. The mills keep busy with old orders, and what little is coming on the market is early taken at full quoted prices. No new business is reported in skelp. Makers of this class of iron are exceedingly dull. We quote: bars, 2c. to 2 1-10c.per lb.; plate and tank, 2½c. to 6c. per lb.

RAILS.—The rail mills report business in steel good, with a firm feeling, and only large and cash buyers can buy at prices ruling a few weeks ago. In iron nothing new is reported, excepting some inquiry for small lots. We quote steel, $41 to $43; iron, $33 to $35, all at mills.

OLD RAILS.—The demand for old rails continues good full prices are quoted. We report sales of 200 tons old streets, at $22, and 500 tons old T at $20.50. We quote $20 to $21 Philadelphia.

SCRAP.—Wrought scrap continues in abundance, and low prices are quoted. In cast little, if anything, is doing. We quote: Wrought, $20 to $24; cast, $12 to $16;

MUCK BARS—We quote $30 to $34.

Pittsburg, Pa. Jan. 21, 1878.

Specially reported by A. H. CHILDS.

	4 mos.		4 mos.
No. 1 F'dry	$21 00@$22 00	M. & White	$16 00@$18 00
No. 2 "	19 00@ 20 50	Hot Blast Ch.	20 00@ 25 00
Gray Forge	17 50@ 20 00	Cold Blast W.	38 00@ 40 00

Richmond, Va. Jan. 23, 1878.

Specially reported by ASA SNYDER, Esq.

There are signs of returning life in the market for pig irons. The small orders now in hand are based on the closing figures of 1877. There are only six charcoal furnaces in this State in blast, leaving twenty-four furnaces idle.

Virginia Cold Blast Charcoal Pig Iron, cold short		$20@$26	
" " " " " neutral		28@ 31	
" Warm " " " "		20@ 25	
" Anthracite 1 X		20@ 22	
" " 2 X		19@ 21	
" " 2		18@ 19	
" " Coke, West Va. 1 X		22@ 23	
" " " " 2 X		21@ 22	

St. Louis, Mo. Jan. 22, 1878.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

The demand for pig iron has fallen off somewhat since our last report, though prices remain the same. We quote same as last.

COLD BLAST CHARCOAL—ALL NUMBERS.

Hanging Rock	$25@$28	Assorted Bar Iron	$2, rates.
Tennessee	26@ 30	No. 1 Wr'ght Scarp,	60c. cwt
Kentucky	26@ 30	Heavy cast "	65c. "
Missouri	26@ 30	Light " "	55c. "
Georgia	26@ 30	Old rails	$19 00@$20 00
Alabama	26@ 30	Old carwheels	17 00@ 18 00

	No. 1.	No. 2.	Mill.	White and Mottl'd
Missouri stone coal	$22 00	$21 00	$20 00	$19 00
" charcoal	22 00	21 00	20 00	20 00
Tennessee charcoal	22 50	21 00	20 00	19 00
Tenn. coke very soft and strong	23 00	21 00	20 00	18 50
Hanging Rock charcoal	25 00	24 00	23 00	.....
" " cold short	24 00	23 00	.....	.....
	Ex No. 1	No. 1.	B No. 1.	No. 2.
Alice Hanging Rock coke.	$25 00	$24 50	$24 00	$22 50
Quinnimount, W. Va., coke.	23 50	23.00	22 00	21 00

METALS.

NEW YORK, Friday Evening, Jan. 25, 1878.

The past week has continued very quiet, although not so much so as for several weeks previous. The worst feature has been the weakness in prices. The war attitude assumed by England, as reported in the morning despatches, was not looked upon as favorable to the metal trade, but later despatches point to a cessation of hostilities and probably peace throughout Europe. Should the latter prove true it would undoubtedly have a very beneficial effect on all metals.

Gold Coin.—During the week under review the price of gold has ranged from 101⅝ to 101¼ and closed at 101⅜.

Bullion.—The market has been very flat and inactive the past week, without special feature, at lower figures than we have had for some time past. We quote in London 53⅝d., in this city 115½c., and in San Francisco, 10 per cent discount. Gold bars are quoted at ⅛ @ ¼ per cent premium.

Daily Range of Silver in London and New York per oz.

Date.	London Pence.	N. Y. Cents.	Date.	London Pence.	N. Y. Cents.
Jan. 19....	53½	115	Jan. 23.....	53½	115¼
Jan. 21....	53½	115¼	Jan. 24.....	53⅜	115½
Jan. 22....	53⅜	115	Jan. 25.....	53⅜	115½

A telegram from San Francisco says:—"The Occidental and Oriental Steamship Company's steamer Belgic, sailing from this port for China and Japan, carries $3,000 gold, and $1,440,000 silver bullion."

Lincoln County (Nev.) Bullion Product.—The bullion product of this county for 1877, is stated to amount to over $600,000, and the mines looking better than ever before. The prospects for 1878 are very encouraging.

BULLION SHIPMENTS.

We give below a statement showing the amount of the latest bullion shipments in addition to those in our issue of January 19:

December, Northern Belle,	Nev	$46,940
January, Davy,	"	7,356
January 12, Martin White,	"	18,190
January 13, Alps	"	3,182
January 11, Tybo cons.,	"	23,000

Copper.—The sales have amounted to 400,000 to 500,000 lbs. at 17¼@17½c., closing at 17½c. The available stocks are pretty well cleared up, and the prospects of overland shipments are greatly interfered with from two causes: first, the bad condition of the roads, and, second, the unprofitableness of paying 1c. ₱ lb. more for shipping overland than by water. According to a letter dated the 16th inst., no copper had left L'Anse later than Jan. 2, while one of the large companies had announced its intention not to ship copper overland at present prices.

Tin.—Straits in London, yesterday, was quoted at £63, and in Singapore on the 23d inst., $18.87½. L. & F. was quoted in London at £67 10s. We are reported sales in this market at 1,500 to 2,000 slabs, part at 14¾c, and balance at 14⅝c, gold. The present asking prices in gold are as follows: Straits, 14¾c.; L. & F., 14¾@15c.; refined, 14¾@14⅝c. For Straits, 14½c. is bid, and business could probably be done at 14⅝c.

Tin Plates.—These are very quiet. We quote, per box, in gold, as follows: Charcoal tins, $6@6.25, and ternes, $5.75; coke tins, $5.25@5.50, and ternes, $5.37½.

Lead.—There have been sales of about 700 tons of Newark lead at 4 cts. There was more offered at the same figure without finding a buyer. In fact, we are reported that there has been an offer to sell at 3⅞ cts., without finding a buyer. The general market, however, is quite nominal at 4 cts.

Spelter and Zinc.—Spelter is very quiet at 5⅝ cts. Sheet zinc is quite unsettled in a wholesale way. The jobbing price is about 6¾ cts.

Antimony remains unchanged at 11¾ cts. for Hallett's and 12½ to 12¾ cts., gold, for Cookson's.

Salt Lake Ore and Metal Market,

SALT LAKE CITY, UTAH, Jan. 24, 1878.

Argentiferous Lead (Base Bullion).—$35@37 ₱ ton for lead; $1.15@$1.16 ₱ ounce for silver; $20 ₱ ounce for gold. The quotations for silver are based upon the silver contents in the lead of 80 to 120 ounces ₱ ton of 2,000 lbs.

Statement of bullion and ore shipped from Salt Lake during week ending January 12, 1878:

BULLION.

Consignor.	Consignee.	Lb.	Total Lb.
Smelting Works.			
Morgan.....	Omaha Smeltg. Wks.	109,877	.....
Germania	"	62,302	.....
Waterman	"	206,017	.....
Durell.....	"	20,552	398,748
"	Penn. Smeltg. Wks.	21,339	.....
Mingo.....	"	283,682	305,021
Germania.....	Hagen & Billings, N.Y.	61,479	61,479
Total.....			765,248

ORE.

Consignee.	Consignor.	Lb.	Total Lb.
Raymond & Ely Mine	Omaha S. W'ks.	20,000	20,000
Galena Mine.....	Penn. Smeltg. Wks.	21,950	.....
Yosemite & Galena	"	65,400	87,350
Carbonate Mine.....	Hillard Smeltg. Wks.	250,850	.....
Last Chance.....	"	23,150	.....
Flaggstaff.....	"	21,350	295,350
			402,700

FINANCIAL.

New York Stocks.

NEW YORK, Friday Evening, Jan. 25, 1878.—The business of the week previous to to-day has been very quiet in the coal shares. To-day the sales have amounted to about 25,000 shares in total, while prices have been very weak. This was caused by the unhealthy appearance of the coal combination; but as the meeting in Philadelphia to-day was quite harmonious, and at last everything is fixed, there may be a chance for a few to unload before further developments of an unsatisfactory nature are made.

Delaware, Lackawanna & Western Railroad—The annual meeting of this company will be held on the 19th of February.

Maryland Coal Company.—The annual meeting of the stockholders of this company will be held February 5.

The Cannelton Coal Company of West Va, will hold its annual meeting February 5.

St. Louis Iron Mountain & Southern Railroad Co.—$5,000 of the second mortgage 7 per cent. gold bonds of this company, due 1881, with funded interest certificates of $105 attached to each bond, sold at auction during the week at 61 per cent.

STOCKS.	Par Value.	Highest.	Lowest.	Sales: Shares.
American Coal Co.	$25	.....	.....	.....
St.L.,I.M.& S.R.Co..	100	6¼	6	845
Spring Mt. Coal Co.	50	.....	35	.....
*Cambria Iron Co..	50	.....	51	.....
*Penn. Salt Mf'g Co.	50	.....	68	.....
*Westm'land C. Co.	50	.....	65	.....
*Buck Mt. Coal Co..	50	.....	30	.....
*Schuyl. Nav. Co...	50	.....	.....	.....
†Balt.& O.RR.Co.pf	100	96	.....	10
" " " com	100	90	86½	258
†George's C'k C. Co	100	.....	.....	.....
†S. Clara M'g Co...	100	.....	.....	.....
†Atlantic Coal Co.	10	1.40	1.30	200

BONDS.	Princ'l. When Due.	Int'est. When Due.	Hig'st.	Lowest	Amount.
D., L. & W., 7s, conv	1892	J. & D.	.....	.....	.....
" " " 2d mtge.	1881	M. & S.	.....	.....	.....
N.J.C.,1stmtge.new	1890	F. & A.	114	113½	$34,000
" " 1st mtge.,con	1899	Q.	66	.....	5,000
" " convt.....	1902	M. & N.	63¼	62¾	12,000
Lehigh & W. B., con	1899	Q.	35¼	35	66,000
Am. Dock & Imp. 7s	.....	J. & J.	.....	.....	.....
St.L.I.M.& S.,1st mt	1892	F. & A.	106⅞	106	9,000
Ches. & O., 1st mtge	1890	M. & N.	24	.....	3,000
D & H C Co.,1stm.rg	1884	J. & J.	96½	.....	3,000
" " " "	1891	J. & J.	97	96½	6,000
" " " " m.loan cp	1894	A. & O.	95	94¾	3.000
" " " " rg.	1894	A. & O.	97	96	4,000
" " " " new mge.	.....	.....	.....	.....	.....
*L.V.R.,1stm.6s.cp.	1898	J. & D.	109	.....	8,000
" " " rg.	1898	J. & D.	.....	.....	.....
" " 2d m. 7s,rg.	1910	M. & S.	114¾	114¼	4,000
" " con.m.6s,rg	1823	J. & D.	96	.....	19,000
" " " 6s cp.	1923	J. & D.	.....	.....	.....
*Pa.RR.,1st m.6s,cp	1880	J. & J.	106	.....	1,000
" " g. m., 6s, cp.	1910	J. & J.	107¼	107	9,000
" " 6s, rg.	1910	A. & O.	109¾	109	7,000
" " con.m.6s,rg.	1905	Q.	.....	.....	.....
" " " 6s, cp.	1905	J. & D.	92½	.....	37,000
" " new loan, 6s	.....	.....	110	.....	42,000
*P.& R. R., 1st m.6s, R. C. 43-44.....	1880	J. & J.	102½	.....	1,000
P. & R. R., 1st m. 6s, R. C. 48-49.....	1880	J. & J	.....	.....	.....
P.& R. R.,2d m.7s cp	1893	A. & O.	.....	.....	.....
" " " scrip....	1882	J. & J.	65	64	2,775
" " " in.m.7s,cp	1896	J. & D.	65	.....	13,000
" " " c.m.7s,cp.	1911	J. & D.	102¼	102⅛	14,000
" " " 7s. rg.	1911	J. & D.	102½	.....	5,000
" " " cvt.7s,R.C	1893	J. & J.	.....	.....	.....
" " C.& I.Co.,Deb 7s, R. C.....	1892	M. & S.	.....	.....	.....
P. & R.C.& I. Co., m. 7s, R. C.	'92-3	various	.....	.....	.....
L. Nav. Co.,6s,rg.m.	1884	J. & Q.	104½	104	2,430
" " RR., rg. m.	1897	F. & Q.	104	.....	1,000
" " cvt. co. G. R.	1894	M. & S.	.....	.....	.....
" " " Gold R. C.	1897	J. & D.	88	86½	.....
" " con.m.7s,rg.	1911	J. & D.		.....	.....
*P.& N.Y.C.,7s,R.C.	1896 1906	J. & D.	.....	.....	4,000
*Pa. Canal, 6s, cp..	1910	J. & J.	111½ 6 0	.....	2,000
*Schuyl.Nav.,1st m. 6s. rg.....	1897	M. & Q.	.....	.....	.....
*Sus.Coal, 6s, rg...	1911	J. & J.	.....	.....	2,000
†Balt.&O. RR., 6s..	1880	J. & J.	101⅞	.....	1,000
" " " 6s..	1885	A. & O.	105	.....	6,000

Total transactions for the week.....$326,205

Philadelphia Stocks.

PHILADELPHIA, Friday Evening, Jan. 25, 1878.

Prices are lower in all the coal shares at the close than at the beginning of the week. In Pennsylvania Railroad and Philadelphia & Reading Railroad there has been a very liberal business. The former declined from 32½ to 30¾, and the latter 16½ to 16. Lehigh Valley has fallen of from 41¾ to 40, and Lehigh Coal and Navigation from 18¾ to 18¼. The uncertain standing of the coal combination in connection with the mercantile failures during the week have been the depressing causes.

Pennsylvania Railroad Company.—The *Ledger*, in commenting upon the business of this company during the past year, says: "The Pennsylvania Railroad has made up its statement of business for December sufficiently to be able to give an approximate statement of the traffic receipts and expenses for that month and for the year 1877, as compared with the corresponding periods of 1876. During December, 1877, all the lines east of Pittsburg and Erie, when compared with December, 1876, show a decrease in gross earnings of $241,175, a decrease in expenses of $68,620, and a decrease in net earnings of $172,555. For the year 1877, as compared with the year 1876, all the lines east of Pittsburg and Erie show a decrease in gross earnings of $5,773,915, a decrease in expenses of $3,052,762 and a decrease in net earnings of $2,721,153. The lines operated by the Pennsylvania Railroad west of Pittsburg for the year 1877 show a deficiency in meeting all liabilities of $461,290. In considering this statement, which represents the traffic returns of the Pennsylvania Railroad for the past year, and gives, we are informed, a close approximation to the figures that will appear in the forthcoming annual report, it is important to remember that the comparison is made with the Centennial year, when the business was largely increased by the heavy traffic arising from the Exhibition."

Huntingdon & Broad Top Mt. Railroad & Coal Co.—The annual meeting of this company will be held Feb. 5.

Schuylkill Navigation Co.—This company will hold its annual meeting Feb. 12.

The Kittaning Coal Co. will hold its annual meeting Jan. 31.

Fulton Coal Co.—This company has declared a dividend of 3 per cent. on its capital stock, payable Jan. 29.

The Locust Gap Improvement Co. has declared a dividend of 6 per cent. payable Jan. 29.

AUCTION SALES.—During the week the following stocks and bonds were sold at auction at the prices annexed:

Lehigh Coal & Navigation Co.—$1,500 of the 6 per cent. bonds, due 1897, at 102 per cent.

Philadelphia & Reading Railroad Co.—$1,500 of the 7 per cent. bonds, due 1893, at 54½ per cent.

Pennsylvania Railroad Co.—15 shares at $31⅝ per share.

Lehigh Valley Railroad Co.—10 shares at $41¼ per share.

Philadelphia & Reading Railroad Co.—87 shares at $16⅛ per share.

Mine Hill & Schuylkill Haven Railroad Co., 9 shares at $48½ per share.

Schuylkill Navigation Co., 11 shares (common), at $64¾ @64⅞ per share.

Huntingdon & Broad Top Mountain Railroad & Coal Co., $1,000 of the 7 per cent. bond A. & O., at 32½ per cent.

Danville, Hazleton & Wilkesbarre Railroad Co., $500 of the first mortgage 7 per cent. bonds at 18 per cent.

Pennsylvania Steel Co., 5 shares at $65 per share.

Pennsylvania Gas Coal Co., 85 shares at $40@$41 per share.

Pennsylvania Salt Manufacturing Co., 140 shares at $65@$66 per share.

Lykens Valley R. R. Co.—130 shares at $25 per share.

Charleston, S. C., Mining & M'fg Co.—$4,000 of the first mortgage 9 per cent bonds at 106 per cent.

American Dredging Co.—30 shares at $9 75 per share.

Union Canal Co.—$5,000 of bonds coupons on from May, 1861, inclusive at 10½ per cent.

Copper Stocks.

Reported by Wilson W. Fay & Co., Brokers in Mining and Miscellaneous Stocks, Room 7, Traveller Building, 31 State street.

BOSTON, Wednesday Evening, January 23, 1878.

There has been a very fair amount of business the past week, the prices generally remaining firm and steady, with a few exceptions in the larger stocks, those that are quoted ex-dividend in particular, they having dropped more than the amount of the dividend.

The Quincy Mining Company have declared a dividend of five dollars ($5) per share to stockholders of record January 21, 1878, and payable February 15, 1878. Massachusetts stockholders shall be paid at the office of T. Henry Perkins, 4 Congress Square, Boston, and the transfer books shall be closed from January 21 to February 15, 1878.

Calumet and Hecla has fallen off since it has been quoted ex-dividend, and there is no apparent reason for the decline. It would be safe to infer that the stock was raised higher than it deserved before the dividend, by some anxious parties who desired to buy in order to get the dividend. It closes 174½@174⅝.

Copper Falls is strong at 2⅛ to 2¾, and sales of five or six hundred at 2⅛.

Franklin is quiet as usual, and a little weak at 6¾ to 7¼.

Osceola has fallen off apparently on a sale of 70 shares, the best bid at present being 14½ to 15½ asked, and 70 shares sold at $15.

Pewabic remains unchanged.

Quincy is rather weak since the dividend, there being no special demand for it at 35 best bid, and offered at 36. (Ex-dividend.)

Ridge is quiet, there being no change of importance.

Duncan silver has fallen off to 1¾, but has strengthened again, there being but very little stock on the market, the holders all probably awaiting another favorable letter, which is daily expected. It closes $2.60 to $2.70.

International is quiet at 30 to 35.

The Merrimac Silver Mining Company has reorganized, under the laws of the State of New York, and the capital stock is to consist of 100,000 shares.

The market price closes $2 to $2.50.

Gold and Silver Stocks.

NEW YORK, FRIDAY EVENING, Jan. 25, 1878.

A very moderate business has been done in mining stocks during the past week, the total transactions reaching 47,580 shares. The most prominent feature of the week has been the advance in the stock of the Seaton Consolidated Gold & Silver Mining Company from $1.50 per share, as quoted in our last, to $2⅛ as the final price to-day, the sales for the week amounting to 3,400 shares. Bertha & Edith has been largely dealt in at very low figures. Moose has sold to the extent of 13,240 shares at fairly steady prices. King's Mountain shows a slight advance; the final price being $3¼ per share, against $3⅛ a week ago; the sales amounted to 5250 shares. Hukill has been strong during the dealings of the week; the latest sales being made on the 24th inst., at $5¼ per share; the sales aggregate about 1,000 shares.

A despatch from San Francisco says that the Ophir Mining Company has levied an assessment of $1 per share, delinquent February 25.

The stock of the Consolidated Gold Mining Company has sold to the extent of 2,070 shares, the prices ranging from $12 to $10, and closed at $11¼.

We note the announcement that this Company has purchased the Slide mine. This mine was illustrated in the JOURNAL of Oct. 20, 1877. J. Alden Smith, the State geologist of Colorado, who made the examination of the Slide mine, justifies an estimate of an immediate and continued production of $20,000 per month for the coming two years without further development. The deeds were dellivered on 21st inst. The American does not increase its capital stock, nor in any wise create liabilites by this acquisition to its original property, which has paid a regular dividend of 12 per cent. on its capital stock and it is stated has surplus assets of over $200,000 at this date.

We refer to our staff correspondence for further information on this and other telluride mines.

La Crosse has ranged from 36c. to 33c., and closes at 34, with sales of 9,000 shares. At a meeting of the stockholders of this company, on the 24th inst., $2,100 was raised from sales of stock in the Treasury, for the purpose of providing funds for continuing the tunnel 300 feet further, making the total length 1,300 feet, at which point it is expected the Gardner & Illinois Lodes will be intersected.

The *Gold Hill News* says: "Arrangements have been completed with the Sutro Tunnel Company whereby the Senator Mine can be worked through the tunnel as soon as the tunnel shall reach the mine, which it will do before

COAL TRANSPORTATION AND GENERAL MINING STOCKS.

COAL STOCKS.

NAME AND LOCATION OF COMPANY.		Feet on Vein.	Capital Stock.	SHARES. No.	SHARES. Par Val.	ASSESSMENTS. Total levi'd to date.	ASSESSMENTS. Date and amount per share of last. Mo.	Yr.	Amt.	DIVIDENDS. Total paid to date.	Last Dividend. Mo.	Yr.	Amt.	Rate per Ann.	HIGHEST AND LOWEST PRICES PER SHARE IN CURRENCY AT WHICH SALES WERE MADE. N. B.—Quotations of D., L. and W. R. R., and Pa. Coal Co. are per $100—two shares. Jan. 19. H.	Jan. 19. L.	Jan. 21. H.	Jan. 21. L.	Jan. 22. H.	Jan. 22. L.	Jan. 23. H.	Jan. 23. L.	Jan. 24. H.	Jan. 24. L.	Jan. 25. H.	Jan. 25. L.	SALES.
			$			$				$				Per c'nt												
Consol. Coal	Md.		10,250,000	102,500	$100	*					Jan.	1877	2½	2½												
Del. & H. Canal	Pa.		20,000,000	200,000	100	*				38,821,104	Aug.	1876	4	9	51	50¼	50¾	49¼	50⅜	49⅝	50	49¼	49⅝	49	49¼	48¼	4,35.5
Del., Lac. & W. R. R.	Pa.		26,200,000	524,000	50	*					July	1876	2½	5	51¼	50⅛	51	50¼	51¼	50⅝	50¼	49⅝	50⅜	50⅛	50¼	49¼	30,590
Lehigh C. & Nav.	Pa.		10,448,550	208,971	50	*					Nov.	1876	1½	5½	18¾	18⅛	18⅝	18⅞	18⅝	.....	.....	18⅝	18⅜	18⅛	18¼	18¼	1,074
Lehigh Valley R. R.	Pa.		27,042,900	540,858	50	*									41¾	41¼	41⅜	41⅜	41⅝	41¼	41½	41	41	40¾	40⅜	40	843
Maryland Coal	Md.		4,400,000	44,000	100	*					Jan.	1876	1½	1½												
N. J. Central R. R.	Pa.		29,600,000	296,000	100	*					Apr.	1876	2½	2½	16	16	15⅝	15⅜	15¼	15	.....	.....	15⅛	15½	15¼	15¼	1,305
Pennsylvania Coal	Pa.		5,000,000	100,000	50	*																				
Pennsylvania R. R.	Pa.		68,870,200	1,337,404	50	*					May.	1877	1¼	8	32½	31⅞	31⅞	31⅜	31⅛	31⅛	31¼	31	31⅜	31⅛	30⅞	30¾	51,568
Phil. & Read. R. R.	Pa.		34,278,175	685,563	50	*				43,012,497	Jan.	1876	2½†	10	16½	16⅛	16½	16¼	16⅜	16⅛	16¼	16¼	16⅜	16⅛	16¼	16	11,154

GENERAL MINING STOCKS.

Dividend Paying Mines.

American	Col.		1,000,000	100,000	10	*				20,000	Jan.	1878	$0 10	12												
Belcher, G. S.	Nev.	1,040	10,400,000	104,000	100	1,176,400	Dec.	1877	1 00	15,397,200	Apr.	1876	1 00	12	10⅜	10	11	10½	11	10⅛	11	.....	12	11½	.....	.....	2,070
Bobtail, G.	Col.	2,500	1,136,630	227,326	5	*				56,831	Nov.	1877	25	.....												
Bobtail Tunnel, G.	Col.		100,000	20,000	5	52,000	July	1873	0 30	40,000	Dec.	1877	50	20												
California, G. S.	Nev.	600	54,000,000	540,000	100	.....	.....	.....	.....	22,080,000	Jan.	1878	2 00	24												
Calumet & Hecla, C.	Mich		2,000,000	80,000	25	1,200,000	.....	.....	.....	12,250,000	Oct.	1877	5 00	20												
Central, C.	Mich		500,000	20,000	25	100,000	June	1862	0 65	1,160,000	Feb.	1877	7 00	....												
Chollar Potosi, G. S.	Nev.	1,400	2,800,000	28,000	100	1,500,000	Oct.	1877	3 00	3,080,000	Feb.	1872	1 00	....												
Copper Falls, C.	Mich		1,000,000	20,000	50	535,000	May.	1876	.....	100,000	Nov.	1871	1 00	....												
Cons. Virginia, G. S.	Nev.	710	54,000,000	540,000	100	474,000	June	1873	3 00	36,720,000	Jan.	1878	2 00	24												
Confidence, G. S.	Nev.	130	2,496,000	24,960	100	243,840	Mar.	1873	1 00	78,000	May.	1865	8½	8½												
Cons. Her. & Roe	Col.	16,500	1,000,000	100,000	10	*				120,000																
Crown Point, G. S.	Nev.	600	10,000,000	100,000	100	1,573,370	Sept.	1877	1 00	11,588,000	Jan.	1875	2 00	24												
Eureka Cons., G. S. L.	Nev.		5,000,000	50,000	100	100,000	May	1876	1 00	1,300,000	Oct.	1877	3 00	24												
Eureka G. Mg., G.	Cal.	1,680	2,000,000	20,000	100	.....	.....	.....	.....	2,134,000	Aug.	1877	2 00	....												
Franklin, C.	Mich		500,000	20,000	25	300,000	June	1876	5 00	585,000	Nov.	1871	1 00	....												
Gould & Curry, G. S.	Nev.	612	10,800,000	108,000	100	2,558,000	Dec.	1877	1 00	3,826,800	Oct.	1870	10 00	....												
Grand Prize	Nev.									1,200,000	Dec.	1877	1 00	....												
Hale & Norcross, G. S.	Nev.	400	11,200,000	112,000	100	2,746,000	Dec.	1877	1 00	1,598,000	Apr.	1871	5 00	12												
Hukill, G. S.	Col.	3,288	1,000,000	100,000	10	*				120,000	Jan.	1878	0 10	12	5⅛	4⅞	5½	5	5½	5⅛	.....	.....	5¼	.....	.....	.....	1,020
Kentuck, G. S.	Nev.	95	3,000,000	30,000	100	270,000	Dec.	1874	1 00	1,252,000	Mar.	1870	5 00	....												
Leopard, L. G. S.	Nev.	1,500	5,000,000	50,000	100	100,000	July.	1877	50	162,500	Dec.	1876	0 50	....												
Merrimac, S.	Mas.	1,500	500,000	50,000	10	*				100,000	Dec.	1877	0 10	12							4	.....					100
Minnesota, C.	Mich.		1,000,000	20,000	50	436,000	June	1869	1 00	1,820,000	Mar.	1876	0 50	....												
Moose	Col.	39,000	2,000,000	200,000	10	*				175,000	Jan.	1878	0 25	10	8¼	7¾	8¼	8	8⅜	8⅛	8⅜	8⅛	8¼	8	8⅜	8	13,240
National, C.	Mich.		500,000	20,000	25	195,000	Oct..	1875	1 00	360,000	Oct.	1873	1 00	....												
N. Y. & Colorado, G.	Col.		1,000,000	50,000	20	*				20,000	Mar.	1877	0 20	....			2⅜	2⅛	2¼	.....	.....	.....	.....	.....	.....	.....	1,000
Northern Belle, S.	Nev.	1,600	5,000,000	50,000	100	.....	.....	.....	.....	1,400,000	Oct.	1877	1 00	....												
Ontario	Uth.	3,000	10,000,000	100,000	100	.....	.....	.....	.....	900,000	Jan.	1878	0 50	6			30½	.....	30½	30¼	.....	.....	30⅜	.....	.....	.....	700
Ophir, G. S.	Nev.	675	10,080,000	100,800	100	2,934,400	May.	1875	2 00	1,394,400	Mar.	1864	4 00	....												
Pewabic, C.	Mich.		500,000	20,000	25	185,000	June	1868	3 00	460,000	July	1873	1 00	....												
Phoenix, C.	Mich.		1,000,000	20,000	50	817,500	Sept.	1870	3 00	20,000	Jan.	1876	1 00	....												
Quincy, C.	Mich.		200,000	20,000	10	*				2,130,000	Feb.	1877	4 00	....												
Raymond & Ely, G. S.	Nev.	5,000	3,000,000	30,000	100	540,000	Dec..	1876	1 00	3,075,000	Sept.	1873	3 00	....									3½	.....	.....	.....	50
Ridge, C.	Mich.		500,000	20,000	25	200,000	.....	.....	.....	90,000	Feb.	1875	1 00	....												
Rye Patch	Nev.	3,000				97,500	Nov.	1876	0 50	150,000	Dec.	1877	0 25	....												
St. Joseph, L.	Mo.	2,000 acs.	1,000,000	100,000	10	.....	.....	.....	.....	250,000																
Savage, G. S.	Nev.	860	11,200,000	112,000	100	3,650,500	Jan..	1878	1 00	4,460,000	June	1869	3 00	....												
Seaton, G. S.	Col.	1,700	500,000	50,000	10	*				10,000	May	1877	0 10	12				1¼	145	135	1¼	2⅛	135	2⅛	2	.....	3,400
Sierra Nevada, G. S.	Nev.	3,650	10,000,000	100,000	100	1,000,000	Jan..	1878	0 50	102,000	Jan.	1871	1 00	10												
Silver King										100,000	Dec.	1877	0 50	....												
Standara	Cal.									200,000	Dec.	1877	1 00	....												
Yellow Jacket, G. S.	Nev.	1,200	12,000,000	120,000	100	3,438,000	Jan..	1878	2 00	2,184,000	Aug.	1871	2 50	....	10¼	.....											

Non-Dividend Mines

Allouez, C.	Mich.		1,000,000	20,000	50	940,000	May	1876	5 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alpha, G. S.	Nev.	300	3,000,000	3,000	100	210,000	Aug.	1877	1 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Am. Flag, G.	Col.	5,300	600,000	60,000	10	*				.....	.....	.....	.....	.....	9c	.....	.....	.....	.....	.....	.....	.....	.....	9c	9c	700
Bertha & Edith. G.	Vir.	645 acs.	3,500,000	350,000	10	*				.....	.....	.....	.....	.....	4c	.....	4c	.....	5c	4c	.....	.....	5c	4c	5c	4c	10,700
Best & Belcher, G. S.	Nev.	545	10,080,000	100,800	100	337,792	Aug.	1877	1 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bullion, G. S.	Nev.	943½	10,000,000	100,000	100	2,702,000	Oct.	1877	1 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caledonia, G. S.	Nev.	2,188	10,000,000	100,000	100	1,435,000	Oct..	1877	0 75	.....	.....	.....	.....	.....	.....	.....	.....	.....	3½	.....	.....	.....	.....	.....	.....	25
Cleveland, G.	Col.	3,715	250,000	25,000	10	*				.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Imperial, G. S.	Nev.	408	50,000,000	500,000	100	575,000	Oct .	1877	0 20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. N. Slope & E. C. T.	Col.	15,000	500,000	10,000	50	*				.....	.....	.....	.....	.....	1⅜	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50
Dana, C.	Mich.		500,000	20,000	25	68,000	Jan..	1863	0 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dawson, S.	Ont.		1,200,000	60,000	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Duncan, S.	Ont.		1,200,000	60,000	20	75,000	July	1876	41⅔	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Exchequer, G. S.	Nev.	400	10,000,000	100,000	100	280,000	Sept	1876	1 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Granville, C.	N. C.	9,000	1,000,000	100,000	10	*				0 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Humboldt, C.	Mich.		500,000	20,000	25	100,000	Sept	1876	0 15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
International, S.	Ont.		1,200,000	60,000	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Julia, G. S.	Nev.	3,000	11,000,000	110,000	100	440,000	Aug.	1877	1 00	.....	.....	.....	.....	.....	1⅞	.....	.....	.....	1¾	.....	.....	.....	.....	.....	.....	75
Justice, G. S.	Nev.	2,100	10,500,000	105,000	100	2,027,500	Oct.	1877	2 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kings Mountain, G.	N. C.		1,200,000	120,000	10	*				.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lacrosse	Col.	3,000	1,000,000	100,000	10	*				.....	.....	.....	.....	.....	3¼	3⅛	3¼	3⅛	3¼	3⅛	3¼	3⅛	3⅜	3⅛	3¼	3⅛	5,250
Lucerne	Col.	4,200	5,000,000	500,000	10	*				.....	.....	.....	.....	.....	35c	34c	33c	.....	35c	34c	34c	33c	33c	32c	36c	34c	9,000
Madison, C.	Mich.		500,000	20,000	25	123,000	Sept	1876	0 10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June	1877	1 00	.....	.....	.....	.....	.....	1½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
" common	Cal.	acres.	10,000,000	100,000	100	1,425,000	June	1877	1 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Memphis	Col.	6,000	300,000	60,000	5	*				.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mesnard, C.	Mich.		500,000	20,000	25	160,000	Apr.	1876	0 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexican, G. S.	Nev.	600	10,080,000	100,800	100	181,440	Aug.	1877	0 30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Overman, G. S.	Mich.		1,000,000	40,000	25	880,000	May.	1876	2 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Osceola, C.	Nev.	1,200	3,840,000	38,400	100	2,567,880	Nov.	1877	3 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Petherick, C.	Mich.		500,000	20,000	25	165,533	Mar.	1876	0 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pleasant View, G.	Col.	1,200	200,000	20,000	10	*				.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quicksilver preferred	Cal.	8,500	4,291,300			*				.....	.....	.....	.....	.....	.....	.....	30	.....	.....	.....	.....	.....	.....	.....	.....	100
" common	Cal.	acres.	5,708,700	100,000	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rockland, C.	Mich		500,000	20,000	25	495,000	Jan..	1874	1 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Seg. Belcher, G. S.	Nev.	160	640,000	6,400	100	244,800	Apr.	1876	5 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver City, G. S.	Nev.	3,300	6,310,000	63,100	100	15,775	Nov.	1875	0 25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver Hill, G. S.	Nev.	5,400	5,400,000	54,000	100	102,600	Dec.	1877	1 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Star, C.	Mich.		500,000	20,000	25	265,000	Mar.	1876	0 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Superior, C.	Mich.		500,000	20,000	25	340,000	Mar.	1874	0 25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union Cons. G. S.	Nev.	850	10,000,000	100,000	100	285,000	Oct..	1877	0 25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

G. Gold. S. Silver. L. Lead. C. Copper. * Non-Assessable.

Total Assessment levied to date..... 47,045,530 | Total Sales of Coal Stocks for the week..... 100,359 shares.
Total Mining Dividends to date..... 214,462,832 | Total Sales of Mining Shares for the week..... 47,580 "

† A dividend of 3½ per cent. was declared on the p referred stock of this Co. in July.

long, at a depth of 1,600 feet or more below the surface. Lateral drifts north and south from the tunnel can be made to very good advantage, developing the bonanza wealth of the mine at that depth. The old upper workings showed that a good ore vein existed in the mine, which only required capital, energy and depth to develop."

The *Gold Hill News* of the 16th inst., says of the market at San Francisco: "Immediately upon the heels of our last regular weekly report came a tumble in stocks which was as lively and disastrous as it was unexpected. Alta did it. On Wednesday, the date of our last report, Alta stood as high as $29 per share, with every prospect of a still further rise, but it closed that evening weak and declining. The next day it was still worse, and a regular panic set in, culminating on Friday, with the stock as low as $7 per share. Disappointment in the expected ore development at the 1,150 level, just being reached by shaft and drift, seemed to be the cause, but the trouble really consisted in the fact that the outsiders, the general public, had expected too much, and set the price of the stock too high; fully double what it should have been. The trouble in Alta very naturally affected the entire list, aided by the recommended decrease of dividends in Consolidated Virginia. Since then the market has revived considerably. Ophir is up again on the strength of prospective developments to be made on the 1,900 level shortly, work being fully resumed at that point. The Alta ore development is a good one, notwithstanding all prejudice and trouble to the contrary."

Regarding the decreased interest being taken by the public in the Comstock mines, which is daily becoming more prominent, the San Francisco *Chronicle* says: "Already it has become a matter of public notoriety that over $500,000 of San Francisco capital has been invested in mining properties in the Black Hills, a district bordering almost on the Missouri River—an amount, from report, which is but the beginning of other amounts soon to follow. The mining section embracing Tuscarora, Bodie, Esmeralda, Eureka and Arizona, and other fields, are also rapidly drawing capital from the Comstock, which is beginning to be looked upon as private property, beyond the reach of the outside world of enterprise and speculation.

Sutro Tunnel.—This work had advanced, up to the 15th inst., 18,723 feet. The face of the header is in favorable working ground, consisting of prophylite, quartz and clay. A very fine and promising vein of almost solid quartz, over 30 feet in width, has just been passed through, some streaks of which gave very fine assays. Similar veins have heretofore been cut by the tunnel which showed a fair quality of ore, and which will undoubtedly prove of value when properly opened out. But the principal object is to push ahead toward the main Comstock, without present regard for side issues.

Raymond & Ely Mining Co.—The annual meeting of the stockholders of this company was held in San Francisco yesterday. The bullion product of the company was stated to amount to $302,000. The company has levied an assessment of $1 per share, amounting to $30,000 delinquent during the coming month. The stock of this company opened in San Francisco to-day at $8¼ per share.

Ontario Silver Mining Co.—The latest transactions in the stock of this company show a slight advance on any previous quotation. The production of the company for the first fifteen days of the month amounted to $82,-949.50, assay value.

The Polar Star Gold and Silver Mining Company of Colorado has declared a dividend of 1 per cent. from its January product, payable on demand.

The Black Bear Quartz Mining Company of Colorado has declared its usual monthly dividend of 50 cents per share, amounting to $15,000.

The Silver King (Arizona) Mining Company has declared a dividend of 50 cents per share; aggregating $50,000.

The Rock Island (Nevada) Gold and Silver Mining Company has levied an assessment of 20 cents per share; delinquent February 12th.

Annual Review of the Industries of the Pacific Coast for 1877.—From an elaborate review which appears in the San Francisco *Commercial Herald*, of the 17th inst., we make the following condensed extracts showing the aggregate amounts of various items produced during 1877 and previous years:

Gold and silver yield for 1877	$100,000,000
Gold product of the Pacific coast since 1848	1,542,500,000
Silver product of the States and Territories west of the Missouri River since 1848	370,000,000
Combined gold and silver product of the Pacific slope since 1848	1,912,500,000
Gold and silver exports in twenty-one years	856,524,000
Coinage in San Francisco Mint in 1877	49,772,000
Coinage of Mint from 1854 to Dec. 31, 1877	501,874,500
Mining-stock sales, 1877 (San Francisco Board)	119,699,730
Aggregate mining-stock sales in the regular sessions of the San Francisco Board since its organization in 1863	1,715,242,730
Domestic coals received in 18 years (tons)	3,292,544
California quicksilver product, 1877 (flasks)	78,000
Deposits in savings banks in California	72,500,000
Value of manufactures in San Francisco, 1877	50,000,000

The Idaho Gold Mine of Grass Valley, California.—From the *Foothill Weekly Tidings*. We extract from the annual report of the superintendent of this Company the following:—

During the year we have crushed 29,250¼ tons of ore; of this amount 1,254¾ tons came from the 500 level; 1,518¾ tons from the 600 level; 5,537¾ tons from the 700 level; 9,289½ tons from the 800 level; 10,149 tons from the 900 level, and 1,502¼ tons from the 1,000 level. This gives a yield of

28,925¼ oz. bullion, value	$508,138 20
Sold 108 tons of sulphurets	6,496 10
Paid $20 per ton for working	2,160 00
Specimens	1,950 04
Total yield of tailings	11,390 45
Total yield from ore	$530,143 69

Giving an average of $18.12½ per ton.

This company has paid out in dividends during its existence the following amounts:

1869	11 divs.	agg.	55	per ct.	$170,500
1870	7 "	"	12	"	37,200
1871	12 "	"	75	"	232,500
1872	11 "	"	52½	"	162,750
1873	12 "	"	220	"	682,000
1874	12 "	"	102½	"	317,750
1875	11 "	"	55½	"	172,050
1876	12 "	"	82½	"	255,750
1877	12 "	"	77½	"	240,250
Being 100 dividends aggregating 732¼ per cent. of the capital stock of the company, and amounts to the sum of					$2,270,750

The Assessment List for 1877.—From the San Francisco *Bulletin* we take the following, showing the amount of assessments levied during the past year as compared with the four previous years:

Delinquent in 1873	$6,671,000
Delinquent in 1874	6,777,000
Delinquent in 1875	11,880,000
Delinquent in 1876	11,608,000
Delinquent in 1877	11,598,000

It will be observed that the amount for the past year was the smallest in three years, and the bullion production was the largest. The above list comprises 254 mines, located in California, Nevada, Oregon, Utah, Idaho and Arizona. Some of these mines have levied as many as five assessments during the year, which is the full limit allowed by law, as it takes over two months to collect an assessment, and the second cannot be levied until the first one has all been accounted for. Others levied only four; a larger number levied only two. In a majority of cases only one assessment was collected during the year, just enough to keep the mine open. The heaviest levies came from mines on the Comstock lode, the most noteworthy being those of Belcher, Crown Point, Consolidated Imperial, Gould & Curry, Hale and Norcross, Julia Consolidated, Justice, Overman, Savage and Yellow Jacket. In the early part of the year, on account of the prevailing depression in stock circles, it was thought that much stock would be forfeited for account of the assessments. From the personal inquiries made at several offices we find that the amount of forfeited stock has been no larger than usual."

Assessments of Pacific coast stocks delinquent during the month of January have been levied by thirty different mining companies, the total amount aggregating $1,048,000.

Gas Stocks.

NEW YORK, Friday Evening, Jan. 25, 1878.

We are without our usual quotations of the gas stock market.

New York Gas Co.—Five shares of this stock sold at the Stock Exchange during the week at $120.

People's Gas Company, of Baltimore.—399 shares of this company's stock changed hands during the week at 15 per cent.

The following stocks and bonds were sold at auction during the week:

Metropolitan Gas Light Co.—(Ex. div.), 35 shares at $1.30½ per share and $1,000 scrip bonds (ex. int.) at 101 per cent.

Brooklyn Gas Light Co.—178 shares at $160@159 per share.

Harlem Gas Light Co.—41 shares at $95½@96 per share.

Nassau Gas Light Co., of Brooklyn.—70 shares at $70 per share.

Westchester Gas Light Co.—10 shares at $85 per share.

West Fairmount & Marion Cons. Gas and Coal Co.—A meeting of the stockholders of this company will be held January 31.

Baltimore Gas Co.—We note quotations of the stock of this company during the week; par $100; at $120 bid and $148 asked. The gold certificates were offered at 104½ per cent.

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ADVERTISERS' INDEX.

Air Compressors: (Page.)
Clayton, James, Brooklyn, N. Y. iii
Griffith & Wedge, Zanesville, Ohio v
Norwalk Iron Works Co., S. Norwalk iii
Rand & Waring, New York x

Assaying Tools and Chemicals:
Benjamin, E. R., New York vi
Boulter's Superior Muffles, Philadelphia vi
Kalb, Theo., St. Louis, Mo. 70
Kreischer, B. & Sons, New York v
Riethmann, J., & Co., Denver, Col. ii

Attorneys and Counselors:
Bloss, John B., Washington, D. C. vii
Britton & Gray, Washington, D. C. vii
Drinker, Henry S., Philadelphia, Pa. vii
Mendenhall, W. K., Washington, D. C. vii
Morrison & White, Georgetown, Col. vii

Auction Sales:
Delaware, Lack. and West'n R. R. Co. 70

Banks:
First National Bank, Georgetown, Col. ix

Bankers and Brokers:
Arnold, H. Tracy, & Co., New York 70
Nicolay, Albert H., & Co., New York 70
Van Deventer & Patton, New York 70

Blasting Powder:
Laflin & Rand Powder Co., New York viii
Miners' Supply Co., St. Clair, Pa. ii
Oliver, Paul A., Wilkes-Barre, Pa. viii

Boilers:
Abendroth & Root Mfg. Co., New York x

Books and Periodicals:
American Journal of Science and Art vii
Capital and Labor, London, Eng. vii
Claxton, Ramsen & Haffelfinger, Phila. v
Colliery Guardian, London, Eng. vii
Engineering, London, Eng vii
La Houille, Paris, France vii
Lippincott, J. B., & Co., Philadelphia, Pa. 70
Smith, Fred. H., Baltimore, Md. i
Spon, E. & F. N., New Work ii
Teknish Tidskrift, Stockholm, Sweden vii
Van Nostrand's Engineering Works iv

Coal:
Berwind, White & Co., New York ix
Borda, Eugene (Koh-i-noor Coal), Phila. viii
Borden & Lovell, New York viii
Brown, S. H., & Co., New York viii
Cannelton Coal Co., Philadelphia viii
Consolidation Coal Co., Baltimore, Md. ix
Coxe Bros. & Co., New York ix
Cox & Boyce, New York viii
Heissenbuttel & Wells, New York viii
Hoboken Coal Co., New York ix
Kanawha Coal Lands for Sale ix
Kittaning Coal Co., Philadelphia, Pa. viii
Lehigh Valley Coal Co., New York viii
Maryland Coal Co., New York ix
New Central Coal Co., New York ix
Pardee, A., & Co., New York ix
Philadelphia & Reading Coal & Iron Co. viii
Shaw Brothers, Baltimore, Md. x
Swords, A. S., New York ix
Talbot, Richmond, New York ix
Williams, R. H., New York ix

Coal and Ore Separators:
Bradford H., Philadelnhia iii
Fraser, Chalmers & Co., Chicago, Ill. vi
Krom, Stephen R., New York ii
Wetmore, George C., New York ii

Engineers and Chemists:
Courtis, Wm. C., Wyandotte, Mich. vii
Degenhardt, G. C. Louis, New York vii
Hale, A. W., New York vii
Hartleben, Otto, Georgetown, Col. vii
Hill, John W., Hamilton, Ont. vii
Johnson, Albert, Georgetown, Col. vii
Keyes, W. S., San Francisco, Cal. vii
Lockwood, Geo. P., Salt Lake, Utah vii
Marsh, Geo. E., Georgetown, Col. vii
Porter, J. A., Eureka, Nev. vii
Randolph, John C., New York vii
Reichenecker, Albert, Fairplay, Col. vii
Rothwell, Richard P., New York vii
Sayr & Parmalee, Georgetown, Col. vii
Teal, Foster & Co., Georgetown, Col. vii
Vinton, Gen. Francis L., Denver, Col. vii
Wilson Bros. & Co., Philadelphia vii
Woods, William H., Caribou, Col. i
Wurtz, Prof. Henry, Hoboken, N. J. vii

Emery Wheels:
New York Belting and Packing Co. —

Engineers' Instruments:
Edgerton, N. H., Philadelphia vi
Gurley, W. & L. E., Troy, N. Y. vi
Heller & Brightly, Philadelphia vi
Keuffel and Esser, New York vi
Nickel & Stassberger, Chicago, Ill. vi

Engraving:
Photo-Plate Co., New York 70

Fire Brick:
Colson, Chas. D., Chicago, Ill. 70
Evens & Howard, St. Louis, Mo. vi
Mauer, Henry, New York v
Weber, Adam, New York 69

Gas Process:
American Gas, Fuel and Light Co., Phila. vi

Hoisting Machinery:
Crane Bros. Mfg. Co., Chicago, Ill. vi
Copeland & Bacon, New York x

Hotels:
Crawford House, Colorado Springs, Col. v
Teller House, Central City, Col. v
Victoria Hotel, South Pueblo, Col. v

Hydraulic Jacks and Punches:
Dudgeon, Richard, New York 70
Lyon, E., & Co., New York ii

Injectors:
Wilde, R. W., New York v

Instruction:
University of Wisconsin, Madison, Wis. x

Iron Pipe and Fittings:
McNab & Harlin Manf'g Co., New York v

Machinists' Tools & Machinery:
Lipsey Steel Wrench, New York ii
Place Machinery Agency, The George, New York iii
Pratt & Whitney Co., The, Hartford, Ct. vi
Prentiss & Co., H., New York iv
Rogers, H. A., New York —
Wood & Light Machine Co., Worcester iv

Metal Brokers:
White, Edward P., New York ii

Mining Tools and Goods:
Tritch, George, Denver, Col. v

Mica:
Chester Mica & Porcelain Co., New York iii

Mineral Wool:
Elbers, Alexander D., New York v

Mining, Crushing, Stamping and Smelting Machinery:
Aitchison, R. & Co., Chicago, Ill. iv
Blake's Stone Breaker, New Haven vi
Copeland & Bacon, New York x
Copeland, Dodge & Co., New York —
Council Bluffs Iron Works v
Fraser, Chalmers & Co., Chicago, Ill. vi
Frue Vanning Machine, Chicago, Ill. v
Hartford Foundry & Machine Co., Conn. v
Hull & Belden Co., Danbury, Conn x
Hendrie Bros. & Bolthoff, Central, Col. iv
Krom, Stephen R., New York iv
Morey & Sperry, New York i

Oil:
Lester Oil Co., New York v

Patents:
Alexander & Elliott, Washington, D. C. v
Brereton, Wm. H., Washington, D. C. v
Ennis, H. J., Washington, D. C. i
Somes, F. C., Washington, D. C. v

Pumps:
Cameron, A. S., New York iii
Clayton, James, Brooklyn iii
Crane Brothers Manufac'g Co., Chicago iii
Davidson, M. T., New York iii
Guild & Garrison, Brooklyn, N. Y. iii
Hardick, Chas. B., Brooklyn, N. Y. iii
Harris Steam Pump, New York iii
Kelly, Wm. E. & Bros., New York iii
Knowles Steam Pump, New York i
Norwalk Iron Works Co. —
Worthington, H. R., New York ii

Railway Train Brakes:
Prosser, Thos., & Co., New York —

Railroads and Transportation:
Atchison, Topeka & Santa Fe R. R. 70
Colorado Central R.R. 70
Denver & Rio Grande R.R. 70
Denver, South Park & Pacific R. R. 70
Missouri, Kansas & Texas R.R. 70
New York & Philadelphia New Line —
Pennsylvania R.R. 70

Roofs, Girders, etc.:
Scaife, Wm. B., & Sons, Pittsburg, Pa ii

Rock Drills:
Am. Diamond Rock Boring Co., N. Y. x
Burleigh Rock Drill Co., New York x
Ingersoll Rock Drill Co., New York x
Penn. Diamond Drill Co., Pottsville, Pa. x
Rand & Waring, New York x

Rubber and Belting:
Gutta Percha & Rubber Mfg. Co., N. Y. ii
N. Y. Belting & Packing Co., New York —

Safes and Scales:
Marvin Safe & Scale Co., New York i

Smelting and Refining Works:
Crooke Bros., New York ix
Stetefeldt Furnace Co., San Francisco, Cal vii
United Royal Smelting Works, N. Y. iv

Steam Engines:
Wilde, R. W., New York iv

Steel Works:
Crescent Steel Works, Pittsburg, Pa. viii
Park, Bro., & Co., Pittsburg viii

Tubes and Pipes:
McNab & Harlin Manf'g Co., New York v
Worthington, H. R., New York ii

Valves:
Stone, Fred., & Co., New York vi

Water Wheels:
Alcott's, Mount Holly, N. J. ix
Stillwell and Bierce M'f'g Co., Dayton, O. ii

Wire Rope:
Hazard Mfg. Co., Wilkes-Barre, Pa. viii
Mason, John W. & Co., New York i
Roebling's, John A., Sons, Trenton, N. J. iii

Miscellaneous:
Bailly, P., Brussels, Belgium vii
Delaware & Hudson Canal Co.'s Report. i
Situation Wanted by an Analytical Chemist i
Situation Wanted by a Mining Engineer. i
Wanted to Lease—a coal property i

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